

THE U.S. ARMY AIRBORNE DIVISION, 1942 TO 1945
CONCEPT, COMBAT, AND EVOLUTION

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by

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ABSTRACT

THE U.S. ARMY AIRBORNE DIVISION, 1942 TO 1945: CONCEPT, COMBAT, AND EVOLUTION, by Timothy M. Clauss, 101 pages.

In 1939, the U.S. Army had no formal combat formation capable of reaching the battlefield by air. In response to the success of German airborne operations, the U.S. Army formed a small unit of volunteers which was to experiment with airborne equipment and develop techniques. In the span of six years, the fledgling airborne concept expanded from a small platoon of parachute volunteers into five deployed airborne divisions composed of parachute and glider forces with a formal doctrine.

This thesis examines the development of the airborne division through its employment in the Mediterranean and European Theaters of Operation, as these theaters employed four of the five U.S. airborne divisions during World War II. The doctrine, organization, and equipment of the airborne division changed significantly from its inception through the end of WWII. Personal influence, lessons learned from combat, and logistical limitations significantly affected the evolution of the airborne division.

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ACRONYMS

A/B	Airborne
ETO	European Theater of Operations
GFAB	Glider Field Artillery Battalion
GIR	Glider Infantry Regiment
PFAB	Parachute Field Artillery Battalion
PIB	Parachute Infantry Battalion
PIR	Parachute Infantry Regiment
PTO	Pacific Theater of Operations
RCT	Regimental Combat Team

CHAPTER 1

INTRODUCTION

The U.S. Army airborne division was created organized and equipped for a singular purpose; to conduct the airborne assault. However, what began as a small custom tailored formation evolved once exposed to the rigors and reality of combat and the personalities of senior commanders. When the airborne division concept emerged in 1942, the airborne division authorized by the War Department was a small lightly equipped force only capable of executing the airborne assault under a very particular set of conditions and circumstances. When World War II ended in 1945, the airborne division was less like a specialized light infantry force and more like a standard infantry division.

Four of the five U.S. Army airborne divisions that War Department activated for service in the Second World War served in the European Theater of Operations (ETO): the 82d, 101st, 17th, and 13th Airborne (A/B) Divisions. The 11th A/B Division in the Pacific Theater of Operations (PTO) was the only airborne division to serve outside the ETO. The four airborne divisions in the ETO provide an excellent case study for observing how the airborne division changed out of necessity from its conceptual beginning to the airborne divisions that entered into Germany in 1945. Division-level airborne operations in the ETO highlight the doctrinal and organizational changes within the airborne division that occurred from 1942 through 1945. The terrain and enemy situation in the PTO was not conducive to division airborne operations and as a result the 11th A/B Division did not conduct large scale division-level airborne assaults using both parachute and glider assaults. The contributions of the 11th A/B Division in the PTO

during the Second World War are noteworthy, but are not directly applicable to this case study.

This analysis assesses the evolution of the airborne division through changes in doctrine, organization, and equipment. Although distinct, these aspects are all interdependent. In itself a change in one aspect may appear to be a trivial but had a dramatic impact in the others. Of the three aspects, changes in doctrine had the most profound effect on the other two and resulted in major changes to the airborne division structure. For this analysis, doctrine includes formal published War Department doctrine as well as informal doctrine which commanders commonly understood and employed.

CHAPTER 2

CONCEPT TO CREATION

In 1928 the War Department began to experiment with the employment of troops by parachute. The U.S. was not the only nation that was developing the airborne concept. Both the Soviet Union and German had designed equipment, created doctrine, and trained large numbers of parachute troops. In 1936 the Soviet Union had trained more than five thousand parachute troops and dropped them in a large scale exercise.¹ In 1940, Germany employed airborne forces to subdue Holland with reportedly great success. It used these forces again in 1941 in the seizure of Crete. These examples prompted to U.S. to begin a basic study of the airborne concept. This abstract study quickly grew into a program of airborne development that resulted in the training and deployment of tens of thousands of airborne troops and the creation of five U.S. airborne divisions by 1945.

In early May of 1939, the Office of the Chief of Infantry suggested to the G-3 of the War Department that they organize a small detachment of air infantry.² In the fall of the same year, the War Department authorized the Chief of Infantry to conduct a study of the development of airborne forces.³ At this time there was yet no established doctrine in the War Department that addressed airborne forces. In late 1939, the War Department's basic operational doctrine was based on the most recent revision of Field Manual 100-5,

¹Maj. Gen. William C. Lee, Introduction in *Airborne Warfare* (Washington, DC: Infantry Journal Press, 1947), vii.

²Lt. Col. John T. Ellis Jr., *The Airborne Command and Center*, Army Ground Forces Study No. 25 (Washington, DC: Historical Section-Army Ground Forces, 1946), 2.

³Ellis, 2.

Operations published in 1923. This 1923 doctrinal publication had no mention of airborne forces. The 1 October 1939, Field Manual 100-5, *Operations* also failed to mention the employment of airborne forces. The lack of an existing airborne doctrine or established prepotency provided an opportunity for service chiefs to vie for control of the project. The Chief of Engineers advocated that airborne forces would be saboteurs and demolitionists while the Chief of the Air Corps advocated that airborne forces would be marines of the air. After some discussion within the War Department decided that the study would remain with the Office of the Chief of Infantry which had already submitted an outline for the study and development of airborne forces.

On 25 April 1940, the War Department authorized the Chief of Infantry's plan for the formation of a parachute test platoon which would function under the Infantry Board.⁴ The parachute test platoon was constrained in its development of tactics and techniques by Army Regulations which restricted parachute jumps below 1,500 feet. The restriction prevented the test platoon practicing tactical jumps at lower altitudes in order to minimize the time aloft and in turn the time troops were exposed to enemy fire. A lower drop altitude would also contribute to reducing the dispersion of troops on the ground upon landing. In order to progress in the development and validation of parachute tactics and techniques, on 11 July 1940 the Chief of Infantry recommended that the War Department revise the regulations to permit parachute troops to jump at altitudes less than 1,500 feet.⁵ On 21 August 1940, the War Department directed the Chief of Infantry to train parachutists with an initial jump of no less than 1,500 feet and subsequent jumps no

⁴Ellis, 2.

⁵Ibid., 4.

less than 750 feet without further authority.⁶ The lowering of the minimum jump altitude permitted the test platoon to further develop and refine parachute tactics and techniques.

On 29 August 1940, the test platoon conducted its first platoon mass jump.⁷ The test platoon's initial and subsequent mass jumps demonstrated the ability to conduct a mass jump thus validating the tactics and techniques for the employment of parachute troops. The War Department activated the 1st Parachute Battalion on 16 September 1940 which upon amendment became the 501st Parachute Infantry Battalion (PIB).⁸

The 501st PIB faced significant training challenges in the development and validation of the employment of the parachute battalion in mass. The 501st PIB began training with only twelve aircraft which was only enough to drop one company at a time.⁹ Without the ability to drop the entire battalion, it was difficult to demonstrate the effect of massed parachute troops. The limited availability of aircraft was the result of a lack of proper transport aircraft and the Air Corps training priorities. The Air Corps support to ground forces was third in priority behind air superiority and strategic bombing.¹⁰ Additionally, a contingent of 501st PIB soldiers operated the parachute school which

⁶Ellis, 4.

⁷Ibid., 5.

⁸Ibid.

⁹Christopher R. Gabel, *The U.S. Army GHQ Maneuvers of 1941* (Washington, DC: U.S. Government Printing Office, 1992), 41.

¹⁰Ibid., 37.

prevented them from participating in unit training events.¹¹ With the creation of the first parachute battalion, the War Department also began to study the employment of air landing forces. On 21 September 1940, the War Department ordered the commander of the 2d Infantry Division to conduct studies to develop “reference data and operational procedures of the air transport of troops.” The 2d Infantry Division elected to use an infantry battalion to derive the data.¹²

On 22 May 1941, the War Department published Field Manual 100-5, *Operations*. This revision of the field manual was the first to incorporate the employment of troops transported by air. Despite the existence of only one parachute battalion, *Operations* established the battalion as the basic tactical unit of parachute troops. Additionally, the field manual specified that parachute troops would serve as an advanced guard to “seize, hold, and protect landing areas for air landing troops.” *Operations* only considered powered aircraft for the delivery of air landing troops and failed to include glider aircraft which airborne troops eventually employed. It also warned against employing airborne forces unless they could be quickly supported or withdrawn after completion of the mission. Surprisingly, *Operations* also considered “sacrifice missions” where the operation neither called for the withdrawal of airborne forces nor planned for support from other ground or naval forces. In 1941, there were four major missions for airborne troops:

¹¹Memorandum, 30 April 1941, “SUBJECT: Organization of a Parachute School,” in *The Airborne Command and Center*, Army Ground Forces Study No. 25 (Washington, DC: Historical Section-Army Ground Forces, 1946), 98.

¹²Ellis, 3.

1. Seizing and holding, or otherwise exploiting, important tactical localities or installations, in conjunction with or pending the arrival of other military or naval forces.
2. Executing an envelopment from the air in conjunction with an attack by ground forces.
3. Execution of surprise attacks as a diversion or feint in connection with other air landing or ground operations, or to create confusion or disorder among the hostile military and civilian personnel.
4. Execution of an attack against an isolated enemy position, impossible or impracticable of attack by ground forces.¹³

In July 1941, with a formalized, although rudimentary doctrine for the employment of airborne troops, the Secretary of the General Staff expressed his desire to create a “special air-transported unit” for additional tests which resulted in the activation of the 88th Infantry Airborne Battalion under the Chief of Infantry.¹⁴ The test battalion was to expand upon the earlier data collected by the 2d Infantry Division in September of 1940 regarding the transportation of troops by air. The 88th Infantry Airborne Battalion’s priorities for the test were to establish:

1. Airplane transport, including proper combat loads and merits of airplanes then in service.
2. Armament and special equipment.
3. Tables of Organization and Tables of Basic Allowances.

¹³War Department, Field Manual 100-5, *Field Service Regulations Operations* (Washington, DC: Government Printing Office, 22 May 1941), 242-243.

¹⁴Ellis, 6.

4. Tactical doctrine, including landing formations, liaison with air support units, tactical dispositions of small units for combat cooperation with parachute units, and defense of landing fields and the advance thereon.

5. Training program for the Airborne Battalion, for preparing a standard Infantry battalion for airborne missions, and special training for attached units of other arms and services.

6. Training literature.¹⁵

All of the parachute and air landing units had the task of developing tactics and techniques for operations. Of interest is the specific task of developing tables of organization and tables of basic allowances for air landing troops, which indicates that the War Department suspected that air landing units would require organization, training, and equipment different from that of standard infantry units. Additionally, the task to develop training programs for arms of service other than infantry units appears to be the prelude to the incorporation of divisional elements into the airborne units. Up to this time, air landing operations generally called for the transport of regular infantry units by airplane.

In March 1941, the War Department created the Provisional Parachute Group, under the command of Lt. Col. William C. Lee, to supervise the development and training of airborne forces. In July, the War Department authorized the Provisional Parachute Group to expand the parachute training program by creating a formal parachute school, which up to this time was resourced with personnel from the 501st PIB in an ad

¹⁵Ellis, 7.

hoc manner, and provided funding to expand training areas and facilities. The War Department directed Lt. Col. Lee to focus efforts on:

1. The provision of training cadres for additional parachute battalions as the need should arise.
2. Study of permanent Tables of Organization and Basic Allowances.
3. Development of tactical doctrine for the proper employment of parachute troops.
4. Preparation of training literature.¹⁶

The training plan developed by the Provisional Parachute Group trained parachute elements in two phases. The first fourteen weeks conducted training at the squad, platoon, and company level. The second phase was two weeks in length and focused on battalion level operations. Comparatively, the training program allocated little training time to battalion operations. Prevalent in both phases of training was training parachute units to depend only on organic equipment and supply by parachute.¹⁷ The tasks allotted to the Provisional Parachute Group are indicative of the War Department's unease with the existing organization of the parachute battalion and desire for a more refined organization and doctrinal employment. However, the expansion of the parachute training program at Fort Benning set the conditions for the generation of additional parachute forces despite any misgivings the War Department had regarding the parachute battalion.

A month after the activation of the 88th Infantry Airborne Battalion, the War Department activated the 550th Infantry Airborne Battalion as the first air landing unit

¹⁶Ellis, 7.

¹⁷Ibid., 9.

for assignment in the in the Canal Zone, Panama.¹⁸ Shortly after activation C Company, 501st PIB joined the 550th Infantry Airborne Battalion for training. The 550th and C Company conducted the first major airborne training exercise in August of 1941 which included the seizure of the auxiliary airfield in vicinity of Rio Hato with parachute and air landing troops from B-18 bombers and C-39 transports.¹⁹ The successful seizure of the airfield validated the airborne concept of initial seizure of a landing field by parachute troops followed closely by air landing troops with a force larger than a battalion.

When the War Department activated the 88th Infantry Airborne Battalion it also activated the 502d Parachute Infantry Battalion from a cadre provided from the 501st PIB. Two and one half months after activation in September 1941, the 502d PIB participated in the General Headquarters Maneuvers. On 17 September 1941, the 502d PIB dropped a company size force in the rear of the opposing force.²⁰ The Air Corps provided only 13 aircraft in support of the operation which prevented the 502d PIB from massing more troops in the Red force's rear.²¹ The paratroopers of the 502d PIB were able to commandeer enemy vehicles, notionally destroy a bridge, and capture Red force troops before the enemy forces subdued the paratroopers. The exploits of the paratroopers were more of a distraction than a threat and had minimal effect on the Red force operations. The entire mission was a sacrifice mission as they neither intended to link up

¹⁸Ellis, 6.

¹⁹Ibid.

²⁰Gabel, 76.

²¹Ibid., 58.

with friendly forces nor withdraw at the completion of their mission.²² On 19 November, employed this time by the Red force, the 502d PIB jumped from 36 aircraft to seize Pope Field on Fort Bragg in conjunction with bombers and pursuit planes. Unfortunately, the opposing force was prepared for an airborne assault and the Blue force was able to quickly retake the airfield.²³ Although the Blue force at the Pope Field had made thorough preparations to defend against such an assault, the parachute battalion employed the battalion in mass against a key facility in conjunction with Air Corps support. This operation further validated the doctrinal mission of the parachute battalion. Several days later the 502d PIB conducted a parachute assault to secure the western approaches to several river bridges with limited success in that they were able to do so for several hours.²⁴

Based on the success of the parachute battalions, on 30 January, the War Department authorized the creation of the first parachute infantry regiment, the 503d Parachute Infantry Regiment (PIR). The 503d PIR formed from the existing 503d and 504th Parachute Infantry Battalions.²⁵ The regimental Table of Organization called for three infantry battalions of which the War Department did not activate the third battalion of the 503d PIR until six months later on 8 June 1942.²⁶

²²Gabel, 77.

²³Ibid., 144.

²⁴Ibid., 160

²⁵Ellis, 12.

²⁶Ibid., 20.

Shortly after activation of the first parachute infantry regiment on 21 March 1942, the Provisional Parachute Group transformed into the Airborne Command which was responsible for activation, training, equipping, and preparation of airborne units for combat under direct supervision of Army Ground Forces.²⁷ The War Department called for the Airborne Command to study the deliberate integration of all arms into airborne operations. The Airborne Command began to solicit input regarding doctrine and organization from the Field Artillery School, Antiaircraft School of the Coast Artillery as well as the Infantry School in an effort to integrate various arms into airborne operations.²⁸ During this time the Army Air Forces created the I Troop Carrier Command and established several glider training centers in North Carolina, Missouri, and Nebraska.²⁹ The availability of gliders permitted delivery by air of material not possible or practical by parachute.

Army Ground Forces (AGF) Commander, Gen. McNair disliked investing men and material into specialized units and preferred standard forces which provided flexibility during operations. McNair directed the training of regular infantry divisions for air landing operations which would accompany specialized parachute and glider units in airborne operations.³⁰ McNair's opinion of specialized units is evident in published doctrine regarding airborne operations.

²⁷Ellis, 14, 19.

²⁸Ibid., 20.

²⁹Ibid.

³⁰Ibid., 49.

From the Airborne Command's continued development and refinement of organizations and techniques came the publication of Field Manual 31-30, *Tactics and Techniques of Air-borne Troops* on 20 May 1942. This document refined and elaborated on the basic missions of airborne troops as written in 1941 revision of Field Manual 100-5, *Operations* as well as explained the organization and equipment within the parachute infantry regiment, planning considerations for airborne operations, and tactic and techniques for training and operations down to the squad level. The doctrine did not establish the need for specialized troops to conduct air landing operations in that field manual simply called for regular troops, stripped of their heavy equipment, trained in the air landing task, to conduct air landing operations. Other than the missions and recommended training for air landing troops, airborne doctrine focused primarily on parachute troops. Field Manual 31-30 is quite narrow in scope and failed to encompass include developments regarding employment of other arms of service into airborne operations. Despite the formal publication of FM 31-30 and integration of airborne operations into formal Army doctrine, the document soon would be somewhat out of date with advent of the airborne division.

As part of the ongoing effort to refine the organization of airborne troops and develop the best practices with which to conduct airborne operations, in late May 1942, Col. Lee, commander of the Airborne Center, traveled to Great Britain to provide planning input for the airborne phase of the European invasion plan. Upon his return Col. Lee recommended to Gen. McNair the formation of airborne divisions in order to meet the anticipated requirements for the invasion of Europe. Col. Lee also recommended the use of specially trained air landing troops as the British experience was that the

challenges of air landing operations required a level of training and familiarity of which regular troops were not capable. McNair accepted both recommendations. In a memorandum to his Chief of Staff, McNair outlined how he envisioned the organization of the airborne division; two glider regiments, one parachute regiment, one 75-mm howitzer battalion for each glider regiment, one 75-mm howitzer battery for the parachute regiment, one 37-mm antitank battery, one antiaircraft battery, one engineer battalion, and one signal company. McNair, ever the economist directed creation of the airborne division with a “stinginess in overhead and in transportation which has absolutely no counterpart thus far in our military organization.”³¹ All units within the airborne division were significantly smaller than their counterparts in regular divisions. McNair preferred to form a task force around parachute and glider units, but acknowledged that the difficulty in providing the required supporting arms when not organic. McNair’s design for the airborne division was primarily to provide the supporting arms for airborne operations with the intent of allocating parachute and glider regiments as needed for a particular mission. To build his miniature divisions, McNair recommended that in addition to the existing parachute regiments the War Department reorganize the 82d Motorized Division into two airborne divisions. On 23 July, to fill the supporting elements of the airborne division, AGF directed the Commanding General of Service of Supply, Chief of Engineers, Surgeon General, Quartermaster General, Chief

³¹Memorandum AGF M/S, CG to CofS, 19 June 42, in *The Airborne Command and Center*, Army Ground Forces Study No. 25 (Washington, DC: Historical Section - Army Ground Forces, 1946), 131.

Signal Officer, and Provost Marshal General to prepare tables of organizations and tables of basic allowances for airborne units and submit them to AGF within one week.³²

On 30 July 1942, the War Department activated the 82d and 101st A/B Divisions at Camp Claiborne, Louisiana. Activation of the 11th, 17th, and 13th A/B Divisions followed over the next ten months. A study of the possible organization of air infantry from the War Department G3 evolved and resulted in the activation and deployment of five airborne divisions within three years. The idea had become a reality.

³²Letter 320.2/2 (Airborne)(S) - GNRQT (7-23-42) "SUBJECT: Tables of Organization and Tables of Basic Allowances for Units of the Airborne Division," in *The Airborne Command and Center*, Army Ground Forces Study No. 25 (Washington, DC: Historical Section-Army Ground Forces, 1946), 134.

CHAPTER 3

AIRBORNE IN COMBAT

In July 1943, Col. Lee had convinced General McNair of the need for airborne divisions which resulted in the activation of the 82d and 101st A/B Divisions. Despite the ongoing efforts to man and equip the two newly activated airborne divisions the U.S. Army had yet to employ any airborne forces in combat. For the U.S. Army, the employment of airborne troops was still an untested concept. Second Battalion, 503th PIR, later to become 2d Battalion, 509th PIR, was the first parachute battalion to deploy overseas and engage in combat. Although only a single battalion, the airborne assault into North Africa would be the first test of the airborne concept in combat. The lessons learned from the airborne operations in North Africa would contribute to how commanders would employ airborne forces, specifically airborne divisions, in future operations in Sicily and Italy.

Operation Torch

Operation Torch called for the dropping of 2d Battalion, 509th PIR on the Tafaraoui Airdrome as a single parachute battalion. As a battalion detached from its regiment, 2d Battalion would have had been augmented with detachments from the regimental headquarters, service company, and medical detachment totaling four officers and seventy-six enlisted personnel.¹ By design, the parachute infantry battalion had very few support personnel. During Operation Torch, Second Battalion was completely reliant

¹War Department, Table of Organization No. T/O 7-35, *Infantry Parachute Battalion* (Washington, DC: Government Printing Office, 17 February 1942).

on the sea-borne forces from 1st Armored Division for resupply, transportation, medical evacuation and other basic support.

Parachute infantry battalions had very limited anti-tank capability in that it only had M9 anti-tank rifle grenade on which to rely. The table of organization for the parachute infantry battalion authorized only fifteen M1903 rifles which were intended to launch M9 anti-tank rifle grenades for the battalion headquarters.² There were no rifle grenade launchers organizationally allocated to the parachute rifle companies. The heaviest weapons assigned to the parachute infantry battalion were four 81mm mortars in the headquarters company and three 60mm mortars in each company. Although these were effective as infantry support weapons, paratroopers were only able to bring a limited supply of ammunition with them during the parachute assault.³ If the parachute infantry battalion required artillery support, it had to rely on coordinating with regular artillery units supporting the ground forces.

Equipment bundles dropped by parachute contained rifles, submachine guns, machine guns, mortars, ammunition and equipment deemed too bulky or not safe for a paratrooper to carry on his person during a parachute landing. Paratroopers recovered their equipment from bundles after landing. On his belt and in his pockets each paratrooper carried a M1911A1 pistol, pistol ammunition, and hand grenades.⁴ A

²War Department, Table of Organization No. T/O 7-36, *Infantry Headquarters and Headquarters Company, Battalion, Parachute* (Washington, DC: Government Printing Office, 17 February 1942).

³Ibid.

⁴War Department, Field Manual 31-30, *Tactics and Technique of Air-Borne Troops* (Washington, DC: Government Printing Office, 20 May 1942), 51.

paratrooper's pistol was his primary means of defending himself after he landed until he was able to recover his primary weapon from the equipment bundle. Various colored parachutes used to drop the equipment bundles identified the type of weapons and equipment contained in the bundle, as directed by FM 31-30.⁵ This marking method was intended to expedite the recovery of equipment after landing.

As part of Operation Torch, 2d Battalion, 509th PIR, which later became simply the 509th Parachute Infantry Battalion, was to seize the Tafaraoui Airdrome in Algeria in advance of the land forces of the Center Task Force. Two companies of the 2d Battalion, 509th PIR were to conduct a parachute assault in order to seize the Tafaraoui Airdrome while the third company would jump and seize La Senia Airdrome to immobilize Vichy French aircraft on the ground and then rejoin the battalion to defend the Tafaraoui Airdrome.⁶ If the Vichy French capitulated prior to the actual parachute drop the troopers would simply land on the airfields and occupy them.

The plan called for 2d Battalion, 509th PIR to fly 1,600 miles, at night, from England to Algeria. Planners determined that in C-47 transports the journey would take twelve hours. Planner also knew that arriving over the drop zone after 12 hours intact and undetected required some assistance. In order to help guide the flight of C-47s inland, the British warship *H.M.S. Alynbank* was to broadcast a radio signal as it circled in the Mediterranean Ocean twenty-five miles off the Algerian coast. At a range of 200 miles the convoy of troop transport planes would receive the signal which would guide the

⁵William Pelham Yarborough, *Bail Out Over North Africa* (Williamstown, NJ: Phillips Publications, 1979), 91.

⁶*Ibid.*, 24.

aircraft toward the coast.⁷ Once over the coast a second device would guide the air convoy to the drop zone.

Prior to the operation, the Air Corps installed Rebecca receivers on the transport planes. These receivers, when in range, received a signal from the Eureka beacon transmitting from the drop zone on which to home. The Eureka beacon underwent testing in England and performed satisfactorily.⁸ Three weeks before the operation, 2d Lt. Norman Hapgood of the Signal Corps departed England with a beacon to infiltrate Algeria to emplace the Eureka beacon on the drop zone on the night of the jump. The Eureka would indicate when the aircraft were approaching and on this signal, Hapgood and the Algerian “underground” operatives assisting him would light fires to visually identify the drop zone.⁹

Despite thorough preparations, poor weather, darkness, and the daunting distance of 1,600 miles of flight took its toll on the formation of thirty-nine C-47s.¹⁰ Strong easterly winds and turbulence over Spain began to disperse the aerial formation early in the flight. Additionally, the Air Corps only had four sets of celestial navigation instruments available for aircrews flying the mission.¹¹ The aircrews that were fortunate enough to have one of the navigation equipment sets were unable to accurately navigate

⁷Lt. Gen. Edward M. Flanagan Jr., *Airborne* (New York: Ballantine Books, 2002), 42.

⁸Yarborough, 13.

⁹Ibid., 25-26.

¹⁰Flanagan, 43.

¹¹Yarborough, 31.

due to the extreme darkness of the night sky.¹² As dawn approached, single and small groups of aircraft reached the coast of North Africa coast with most of the transports flying over Spanish Morocco as far as 200 miles west of the drop zone.¹³ All through the flight the aircrews listened in vain for the broadcast from the *Alynbank*. Someone had assigned the radio operator on the *Alynbank* the incorrect broadcast frequency.¹⁴ Attempts from the *Alynbank* to contact the flight and inform them that the war plan was in effect were in vain as the aircrews would never hear them. As the planes were so far off course they were out of range of the signal from the Eureka beacon transmitting from the drop zone. Some of the transports, unable to determine their location and out of fuel, landed in the North African desert and discharged their occupants. Several transports dropped their paratroopers over enemy troops who fired on the transports. In the end, the troops of the 509th PIR managed to reach the Tafaraoui Airdrome, which unknown to the paratroopers, Allied sea-borne forces had seized the day prior to their arrival.

After the initial parachute assault to seize the Tafaraoui Airdrome the 2d Battalion, 509th PIR conducted two additional parachute operations. Just after dawn on 15 November, 1942, 2d Battalion, 509th PIR, left the airfield in Maison Blanche, Algeria for a daytime jump to seize the Youks Les Bains Airfield near the Tunisian border. The French who occupied the airfield did not oppose the jump. All of the aircraft located the drop zone and as a result the battalion was able to quickly consolidate and prepare for

¹²Flanagan, 155.

¹³Gerard M. Devlin, *Paratrooper* (New York: St. Martin's Press, 1979), 154.

¹⁴Yarborough, 43.

combat.¹⁵ In contrast, the demolition raid to destroy the El Djem Bridge in Tunisia, which was ninety miles behind German lines, was a complete failure. Shortly after midnight on 25 December 1942, thirty-two paratroopers jumped five miles south of the bridge instead of five miles north of the bridge. In the darkness with no other points of reference, the paratroopers believed that they were on the correct drop zone. They began their movement south with the intent of reaching the bridge before dawn. As the paratroopers were already five miles south of the bridge, their movement distanced them further from the bridge. In the end, the paratroopers were unable to locate the bridge, abandoned their mission, and exfiltrated in small groups back to friendly lines.¹⁶

The mission of the 2d Battalion, 509th PIR was consistent with Field Manual 31-30, *Tactics and Techniques of Airborne Troops* in that the Center Task Force in effect assigned 2/509th the task of “[s]eizing and holding landing fields for the operation of friendly aircraft or to deny their use to enemy aircraft.”¹⁷ The plan was also consistent with established doctrine in that Combat Command “B” of the 1st Armored Division from the Center Task Force would relieve the paratroopers at the airdrome shortly after landing on the beaches.¹⁸ Field Manual 100-5, *Operations* and Field Manual 31-30 emphasize the use of parachute troops as the advance guard for “air landing or

¹⁵Devlin, 167.

¹⁶Ibid., 179.

¹⁷War Department, FM 31-30, 32.

¹⁸Yarborough, 24.

mechanized troops in the path of the main ground effort.”¹⁹ The issue with the doctrinal employment of the 2d Battalion, 509th PIR was that the Tafaraoui Airdrome was not “impossible or impracticable of attack by ground forces.”²⁰ The airdrome was close enough to landing beaches that the sea borne landing forces could have achieved the same result with ground forces as the planned parachute assault. Indeed, the ground forces did seize the Tafaraoui Airdrome a day before the first small group of paratroopers, who were badly scattered across the desert, reached the airdrome.

The parachute assaults in North Africa highlighted the importance of reaching and identifying the correct drop zone. The navigational aids of the time period compounded by plans based on inaccurate maps made verifying and marking the drop and landing zones essential. The plan to use the Eureka beacon might have worked had fate not intervened. The ability to mass airborne troops on the correct landing zone became a major concern for airborne leaders.

The delivery of individual weapons and equipment by parachute, although a good way to prevent a paratrooper from injuring himself on his equipment when landing, proved in need of refinement. Dropping weapons, ammunition, supplies, and other equipment by colored coded parachute aided in the speedy recovery of items on the drop zone after landing. However, this system of marking and recovery of equipment bundles placed the paratroopers at risk between the time they landed and when they reached the appropriate equipment bundle to properly arm and equip themselves. The need for

¹⁹War Department, Field Manual 100-5, *Operations* (Washington, DC: Government Printing Office, 22 May 1941), 241.

²⁰*Ibid.*, 243.

paratroopers to have their primary weapon with them upon landing led to the development of several varieties of individual weapons cases, which attached to the parachute harness.

Operation Husky

The Allied invasion of Sicily was the first combat operation that employed an U.S. airborne division. The 82d A/B Division arrived in North Africa on 10 May 1943 and began training in preparation for the invasion of Sicily.²¹ The 82d A/B Division's 504th and 505th PIRs bivouacked in Oujda with the veteran 509th Parachute Infantry Battalion, previously designated the 2d Battalion, 509th PIR, which was now attached to the 82d A/B Division.²² The 509th had many lessons to share with the 82d A/B Division from its combat experience during Operation Torch. The 82d A/B Division devised methods to overcome some of the difficulties encountered by the 509th, but new issues would arise that would result in the War Department reconsidering the entire airborne division concept.

The organizational design of the airborne division supported reinforcing the parachute and glider infantry regiments with artillery, engineers, and other types of units in order to conduct regimental size operations from several different drop and landing zones. All of the airborne division's subordinate tables of organization supported task organization of the parachute and glider infantry regiments. This structure enabled commanders to augment a parachute battalion or regiment with artillery and other support

²¹Shelby L. Stanton, *World War II Order of Battle, U.S. Army (Ground Force Units)* (Mechanicsburg, PA: Stackpole Books, 1984), 152.

²²Devlin, 215.

it did not possess within its own organization. For Operation Husky, the 82d A/B Division task organized its forces around the parachute infantry regiments in order to drop independent fighting forces each with the essential elements of combat power to accomplish the mission. The reinforced 505th PIR with 3d Battalion, 504th PIR, 456th Parachute Field Artillery Battalion (PFAB), and B Company of the 307th Engineer Battalion jumped into Sicily on 9 July followed by the reinforced 504th PIR, minus 3d Battalion, with 376th PFAB, and C Company of the 307th Engineer Battalion which jumped on the night of 11 July.²³

The expansion of parachute regiments into airborne divisions with artillery, engineer, medical, logistical, and other supporting arms brought additional badly needed equipment and weapons into airborne operations. Specifically, the 1942 tables of organization for the airborne division included several types of antitank weapons. The M1, 2.36-inch rocket launcher, commonly known as the *bazooka* because of its similarity to a comedian's whimsical musical instrument, gave airborne soldiers a weapon with which to engage enemy tanks. The airborne division also had M3, 37-mm antitank guns. These guns were towed, but light enough to transport by glider and for several troops to move the gun without a vehicle.

The plan for Operation Husky called for two parachute drops consisting of the 505th and 504th PIR combat teams jumping onto drop zones between the cities of Niscemi and Gela on the southeastern end of Sicily on 9 and 11 July 1943 respectively.²⁴ The original plan did not call for the use of glider troops to air land although the 325th

²³Flanagan, 74.

²⁴Devlin, 213.

Glider Infantry Regiment and other glider units were present in Marina, Tunisia and prepared for an air landing mission. The air route from North Africa to Sicily began from airfields in Tunisia, flew over the island of Linosa, around Malta, and then north to Sicily.²⁵ Planners intended this route to avoid Allied naval forces off the southern coast of Sicily preparing for the sea-borne invasion and use islands in the Mediterranean Sea as way points en route to Sicily.

Shortly after Operation Husky began weather conditions began to affect the mission. Unforecasted 35 miles per hour winds dispersed Col. Gavin's 226 C-47 transports soon after they began their 415 mile flight.²⁶ Allied forces operated brightly illuminated markers on both Linosa and Malta. The high winds and darkness dispersed the formation further and most of the transport planes missed both waypoints. The aircrews resorted to dead reckoning and in some cases dumb luck to locate Sicily. Unlike the 509th Parachute Infantry Battalion in Operation Torch, the 82d A/B Division did not have the ability to emplace a Eureka beacon on the drop zone to guide the transport planes. As the aircraft reached the Sicilian coast aircrews struggled to look through the smoke and haze from pre-invasion fires to locate check points on the ground in the hope of locating the drop zone while all the while trying to avoid heavy German antiaircraft fire.²⁷ Only elements of the 1st Battalion, 505th PIR and 3d Battalion, 504th PIR landed in the general vicinity of the designated drop zone, although the 504th scattered over a large area. The remaining elements of the 505th PIR's combat team landed dispersed

²⁵James M. Gavin, *On to Berlin* (New York: The Viking Press, 1978), 18.

²⁶Flanagan, 80-81.

²⁷Devlin, 226.

along the coastline for 20 miles south of the drop zone. Twenty three C-47s dropped their paratroopers well east of the drop zone in front of the advancing British forces.²⁸

Two hours prior to Col. Gavin and the paratroopers of the 505th PIR's combat team departure for Sicily, the 144 gliders of the British 1st Air Landing Brigade took flight and headed for Sicily to execute Operation Ladbroke to seize the Ponte Grande Bridge south of Syracuse. The 1st Air Landing Brigade flew in American Waco gliders piloted by British glider pilots who normally flew British Horsa gliders which were not yet available in Tunisia. Unfamiliar with the Waco glider, the British glider pilots trained on the Waco gliders for all of four and one half hours of which only one and two tenths hours were at night. In preparation to conduct a combat glider assault in unfamiliar gliders the British pilots only had the time to conduct an average of 16 practice glider landings per pilot.²⁹ This lack of training was evident as the formation of gliders and their tug aircraft approached the Sicilian coast. Enemy antiaircraft fire disrupted the formation and in the darkness inexperienced glider pilots cut away from their tow planes too early to reach their landing zone. The result was 90 gliders crashing into the sea, 32 crashed along the coast, and only 12 reached the landing zone.³⁰

On 11 July the 504th PIR's combat team took flight headed toward the same drop zone used by the 505th PIR two nights earlier. Despite thorough coordination, as the

²⁸James M. Gavin, *Airborne Warfare* (Washington, DC: Infantry Journal Press, 1947), 12.

²⁹Dr. John C. Warren, *Airborne Missions in the Mediterranean, 1942-1945*, USAF Historical Studies No. 74 (Washington, DC: USAF Historical Division, Research Studies Institute, Air University, 1955), 27-28.

³⁰Devlin, 223.

aerial formation approached the coast, anxious navy gunners, whom German planes attacked relentlessly earlier in the day and sunk two ships, spotted the formation of C-47s and began to fire, believing they were German planes. As the aircraft carrying the 504th PIR crossed the shore, ground forces also began to fire upon the helpless aircraft. Of the 144 C-47s in the formation, antiaircraft fire shot down 23 and severely damaged 37. The antiaircraft fire took a heavier toll on the men on board: 81 paratroopers killed, 132 paratroopers wounded, 16 paratroopers missing, seven aircrew killed, 30 aircrew wounded, and 53 aircrew missing.³¹

On the morning 12 July, the 325th GIR, glider artillery battalions, and other glider troops were preparing to reinforce the parachute forces of the 82d A/B Division in a glider assault onto Sicily.³² Prior to the invasion of Sicily, the priority for glider training in North Africa went to the British for the execution of Operation Ladbroke. Although trained in the United States prior to deploying to North Africa, the glider pilots who would transport the 325th GIR combat team had even less time training in North Africa with the gliders than the woefully untrained British glider pilots.³³ The ruinous glider assault by the British 1st Air Landing Brigade on 9 July compounded by the friendly antiaircraft fire that raked the planes transporting the 504th PIR caused Allied leaders to cancel the glider assault by the 325th GIR.

The widely dispersed drop of the 505th PIR, the failure of the British 1st Air Landing Brigade in Operation Ladbroke, and the friendly fire mishap with the 504th PIR

³¹Flanagan, 91-92.

³²Ibid., 93.

³³Warren, 28.

were followed by one last tragic airborne operation in Sicily. On 13 July, during the execution of Operation Fustian, Allied and Axis anti-aircraft shot down 11 of the 124 C-47s which were carrying British paratroopers while 27 planes aborted their drops and returned to Tunisia.³⁴

Numerous accounts from airborne commanders in Sicily expressed their dissatisfaction with the bazooka's ability to effectively penetrate the armor on German tanks.³⁵ In order to best utilize the capabilities of the bazooka, the paratroopers experimented on destroyed and captured German armored vehicles to determine points where the vehicles were vulnerable to a bazooka attack. During operations in Sicily, the 82d A/B Division had only the bazooka on which to rely for destroying armored vehicles as no glider forces assaulted Sicily which would have brought M3 antitank guns into the fight. After Operation Husky, Col. Gavin identified the need to have gliders deliver 57-mm antitank guns with the initial parachute assault in order to provide adequate antitank capabilities.³⁶ Col. Gavin pursued this request with the War Department, however it took some time for the War Department to implement change.

Field Manual 100-5, *Operations* emphasized that "[o]rdinarily, parachute troops may be considered as the *advance guard element* of air landing troops."³⁷ Although publication of FM 31-30 predated the activation of the first airborne divisions by a month, FM 31-30 specifies that parachute troops are a supporting force to air landing

³⁴Flanagan, 93.

³⁵Gavin, *On to Berlin*, 45.

³⁶Flanagan, 18.

³⁷War Department, FM 100-5 (22 May 1941), 241.

troops. Additionally, in July of 1942, the same month that the War Department authorized the activation of the first airborne divisions, the War Department published the *Instructional Pamphlet for Airborne Operations* which was a 228 page manual that details “the planning and execution of a movement of an airborne force.”³⁸ The published War Department doctrine pertaining to airborne operations all emphasized air landing forces. The plan for Operation Husky was in conflict with the published doctrine for airborne operations in that it did not employ any air landing assets although they were part of the division and available for operations. The absence of a glider assault prevented the delivery of heavy equipment, specifically antitank guns and additional artillery resident in the glider unit.

In the months leading up to the invasion of Sicily Allied airborne planners coordinated air routes, drop zones, and link up plans with Allied naval, ground, and air forces. Both FM 100-5 and FM 31-30 elaborated on the importance of coordination prior to an airborne operation. Despite thorough preparation and distribution of the air routes to ground and naval commanders, numerous Allied ground and naval forces still fired on Allied transports and gliders. The significant loss of troops and equipment to friendly fire was unacceptable.

The difficulties experienced by the Allied airborne forces did not go unnoticed by U.S. Leadership. In an after-action report of Operation Husky to the Army Chief of Staff, Gen. George Marshall, Gen. Eisenhower plainly stated that he did not believe that the airborne division was the proper organization for airborne. Eisenhower’s assessment of

³⁸War Department, *Instructional Pamphlet for Airborne Operations* (Washington, DC: Government Printing Office, 2 July 1942), 1.

the airborne division eventually led the War Department to conduct two investigations into the issues related to airborne division operations. The first, led by Brig. Gen. Albert Pierson, Assistant Division Commander of the 11th A/B Division, concluded that the airborne division was supportable in combat and recommended retaining the airborne divisions. The War Department convened a second board led by Maj. Gen. Swing, who was the senior U.S. airborne advisor to the combined staff planning Operation Husky and the commander of the newly activated 11th A/B Division.³⁹ This board, later referred to as the “Swing Board,” would determine if the airborne division would remain in the U.S. Army.

Operation Avalanche

Shortly after the Allies secured Sicily, the paratroopers of the 82d A/B Division once again began a rigorous training regime in preparation for the invasion of Italy. In the months leading up to landings in Italy, Allied airborne planners worked up several plans for airborne operations. The most notable of these planned, but not executed operations, was Operation Giant II which was an airborne assault on to airfields north of Rome in order to secure the city. Despite the development of several supporting airborne operations, in the end, General Mark W. Clark and his Fifth Army went ashore in Italy without the 82d A/B Division. Although not planned, the situation on the Italian beaches soon required reinforcement by airborne forces.

After the difficulty of locating the designated drop zones during Operation Husky, the 82d organized pathfinder teams to guide aircraft to the correct drop and landing

³⁹Flanagan, 77.

zones. The pathfinder mission was to jump 20 minutes ahead of the main body of aircraft and set up a variety of devices to mark the drop zone and guide the main body of aircraft to the designated drop zone. The pathfinder teams trained at Comiso Airfield in Sicily and worked with specific Air Corps crews in order to build competent aircrew and paratrooper teams.⁴⁰ Pathfinder teams used homing beacons, brightly colored signal panels, signal lights, and communications equipment to guide aircraft onto the designated drop or landing zone. The pathfinders were not exclusively to guide parachute drops, but also glider landing zones and, if the mission dictated, powered aircraft. Pathfinders specifically developed a method of marking glider landing strips with lights for night assaults. The pathfinder teams placed four pairs of light along the length of the strip. Col. Gavin expressed that the results of night glider landings using this technique were quite satisfactory in that “they gave the glider pilots a sense of perspective, and we were quite confident, in view of our training experience, that we could successfully conduct large scale glider landings at night.”⁴¹ These pathfinder teams would test their techniques much sooner than the 82d A/B Division had anticipated.

On the morning of 9 September 1943, Fifth Army began amphibious landings on the beaches near Salerno, Italy.⁴² The well-established German defenses slowed expansion of the beachhead. On 13 September the Germans counterattacked and penetrated the American lines to within three miles of the shore.⁴³ The German forces

⁴⁰Gavin, *On to Berlin*, 52.

⁴¹*Ibid.*, 78.

⁴²Flanagan, 129.

⁴³Devlin, 300.

were in a position to split the beachhead. Lt. Gen. Clark considered abandoning one of his beachheads in order to reinforce the other when his airborne advisor, Lt. Col. William Yarborough, who as Clark's advisor jumped with 2d Battalion, 509th PIR in Algeria, recommended dropping parachute regiments from the 82d A/B Division onto the beachhead as reinforcements and dropping a battalion on the town of Avellino which was where three main highways converged on the approach to the beachhead in order to block additional enemy forces from reaching the beachhead.⁴⁴

On the afternoon of 13 September, a P-38 pilot hand delivered a note from Clark to Maj. Gen. Ridgway requesting he immediately conduct a parachute assault in support of Fifth Army. Although the Division had only a short time to plan, in the weeks leading up to the invasion, the staff had planned multiple airborne operations on Italy and were quite familiar with the overall terrain, enemy situation, and logistical requirements necessary for operations in Italy.

The first aircraft loaded with paratroopers departed its airfield only eight hours from the time Clark's note reached Sicily. In the early evening of 13 September, pathfinder teams jumped onto the Salerno beachhead ahead of the main formation of transport aircraft and activated their beacons within three minutes of landing. With the guidance of the burning "T" and the pathfinders beacons, the 504th PIR and C Company of the 307th Engineer Battalion all landed within 200 yards of the drop zone with the exception of one company. Col. Tucker's entire regiment landed on the designated drop zone, at night, without receiving any antiaircraft fire or suffering a single casualty. The next night, 14 September, the 505th PIR jumped onto the same drop zone at Paestum as

⁴⁴Devlin, 306.

the 504th the night previous. The approach of Col. Gavin's aircraft apparently caught the ground forces off guard which were not able to ignite the "T" before all of the paratroopers had exited their aircraft.⁴⁵ Despite not having the "T" on which to guide, the other guidance methods placed all of the aircraft over the designated drop zone with little dispersion of troopers upon landing. Like the 504th, the 505th PIR did not sustain any casualties from the jump.

On the 13th, the same night as the 504th PIR jumped to reinforce the Salerno Beachhead, the 2d Battalion, 509th PIR, commanded by Lt. Col. Doyle R. Yardley, took to flight to seize the critical road junction in the town of Avellino. The town was nestled in the rugged mountains 16.5 miles beyond the city of Salerno behind German lines. The 2d Battalion had no means to withdraw if necessary. Planners projected that forces from the beachhead would relieve them in no more than five days. The ruggedness of the terrain and the strong enemy presence in the area complicated the simple plan before the paratroopers reached the ground. The height of the mountains surrounding the designated drop zone made it necessary for the aircraft to maneuver around the mountains which disrupted their formations as they approached the drop zone and necessitated that the paratroopers jump from an altitude between 4,000 and 6,000 feet.⁴⁶ The pathfinder team jumped and emplaced the beacon, albeit one mile south of the designated drop zone, but the rugged terrain blocked the signal from reaching the approaching aircraft. The now dispersed transports, unable to detect the signal from the beacon, dropped their paratroopers over terrain they though looked like the drop zone. The result was a disaster.

⁴⁵Gavin, *On to Berlin*, 67.

⁴⁶*Ibid.*, 69.

Small groups of paratroopers landed in the mountains surrounding Avellino, spread across 100 square miles.⁴⁷ Lt. Col. Yardley was never able to mass enough of his battalion to attempt to seize the highway junction. Over the next few weeks, paratroopers of the 509th filtered back to Allied lines from as far as 40 miles behind German lines.⁴⁸ Although small groups of isolated paratroopers occupied some German forces, the battalion was unable to seize the road junction to significantly disrupt German forces from supporting the German counterattack on the Allied beachhead. As Fifth Army had not reached Avellino by 18 September, five days after the 2d Battalion jumped, it is likely that if Lt. Col. Yardley and his battalion were able to seize the highway junction, they would have had to hold out for much longer than five days. Based on the terrain and enemy situation, parachuting in supplies would most likely have been ineffective. The battered remnants of the 2d Battalion, now combat ineffective as a parachute battalion, transferred from the 82d A/B Division and assumed responsibility for guarding the Fifth Army Headquarters.

On 15 September, the 325th landed by ship on the Salerno beach. It joined Col. Tucker and the 504th PIR in expansion of the beachhead. Once again the airborne division which was organized and equipped to facilitate a parachute advance guard followed by the air landing forces as the main effort did not conduct a glider assault.

For Operation Avalanche, the parachute troops reinforcing the beachhead had the added benefit of a ground marker to identify the drop zone. The ground forces marked the drop zone with a large “T” created by igniting cans of sand soaked in gasoline. In FM 31-

⁴⁷Flanagan, 135.

⁴⁸Ibid., 134.

30, “T” was given as a sample panel code for “we are holding this position.”⁴⁹ It appears that given the limited time to plan the operation, for the sake of expediency, the airborne and ground forces simple used the field manual example rather than create a new code.

Although reinforcement of ground units was not a specific airborne mission in either FM 100-5 or FM 31-30, airborne forces were the only forces capable of immediately reinforcing the beleaguered land forces on the Salerno beachhead. General Clark acknowledged the short time frame, but saw that reinforcement was essential to preserving the beachhead.⁵⁰ The task of seizing the critical road junction in the town of Avellino was in accordance with FM 31-30 in that mission called for “seizing and holding key terrain in the rear of organized beach defenses in conjunction with ground and naval forces.”⁵¹ Typically an airborne assault required weeks of planning, training, and prepositioning of troops and equipment. FM 31-30 states that “preparations for an operation should be completed well in advance of the operations and, within the limits imposed by the necessity for secrecy; subordinate commanders should be given timely information of the details of the plan in order that units will have sufficient time to adjust equipment requirements, and complete special training.”⁵²

The mixed results of airborne operations in Operations Torch, Husky, and Avalanche, put the effectiveness and overall usefulness of the airborne division into

⁴⁹War Department, Field Manual 31-30, 16

⁵⁰Devlin, 300.

⁵¹War Department, Field Manual 31-30, 31

⁵²Ibid., 245.

question. Gen. Eisenhower expressed his concern in a letter to Marshall on 20 September 1943:

I do not believe in the airborne division. I believe that airborne troops should be reorganized in self-contained units, comprising infantry, artillery, and special services, all of about the strength of a regimental combat team. Even if one had all the air transport he could possibly use the fact is at any given time and in any given spot only a reasonable number of air transports can be operated because of technical difficulties. To employ at any time and place a whole division would require a dropping over such an extended area that I seriously doubt that a division commander could regain control and operate the scattered forces as one unit. In any event, if these troops were organized in smaller, self-contained units, a senior commander, with a small staff and radio communications, could always be dropped in the area to insure necessary coordination.⁵³

Eisenhower's concern created ripples throughout the War Department. Gen. McNair, Commander AGF, who was initially skeptical of the airborne division but eventually subscribed to the concept, had old doubts about the airborne division resurface. In order to determine if the airborne division was the right organization for airborne troops and settle the issue, McNair directed the 11th A/B Division to conduct the "Knollwood Maneuvers." The maneuvers would test the ability of an airborne division to fly a three to four hour instrument route at night, arrive on time at the correct drop and landing zones, land without sustaining excessive casualties, wage extended combat operations and resupply by airplane, glider, and parachute.⁵⁴ On 6 December 1943, after a one day weather delay, 11th A/B Division dropped paratroopers and landed gliders to seize Knollwood Airport in North Carolina. Six days later the maneuvers were complete. Maj. Gen. Swing submitted his report of the maneuvers to McNair for his review. Swing

⁵³Ltr, Eisenhower to Marshall, 20 September 1943, Misc Exec File, bk. 12, case 80; extracts in CPS 91/1, 19 October 1943, ABC 322 (23 September 1943) in *Sicily and the Surrender of Italy*.

⁵⁴Flanagan, 100.

and his staff that prepared the report knew that the results of the exercise and in turn the report they drafted would determine the future of the airborne division and more importantly to them the continued existence of the 11th A/B Division. One would assume that McNair was expecting to receive a biased report and prepared to filter through the bias. On 16 December 1943, McNair replied to Swing that “[t]he successful performance of your division has convinced me that we were wrong, and I shall now recommend that we continue our present schedule of activating, training, and committing airborne divisions.”⁵⁵ With McNair’s recommendation to the War Department supporting airborne divisions, the future of the airborne division was secure.

In addition to general officers in the War Department having concerns about the airborne divisions, Maj. Gen. Ridgway, Commander 82d A/B Division was also concerned about how commanders employed the airborne division. Ridgway sent a letter to Eisenhower on 27 November 1943 with the subject of “Summary of Principles Covering Use of The A/B Division.” Ridgway’s letter highlighted the need for adequate planning and preparation time as well as that “[t]he airborne effort should support the main ground effort, and be so coordinated with it in time and space that contact with ground forces can be reasonably guaranteed within twenty-four to forty-eight hours.”⁵⁶ Ridgway also specifically stated that commanders should not commit the airborne division piecemeal and use separate parachute and glider units if the mission did not

⁵⁵Ibid., 103.

⁵⁶Ltr, Ridgway to Eisenhower, 27 Nov 43, “SUBJECT: Summary of Principles Covering Use of The Airborne Division,” in *The Airborne Command and Center*, Army Ground Forces Study No. 25 (Washington, DC: Historical Section-Army Ground Forces, 1946), 136.

require the entire division. Part of Ridgway's discord with how higher commanders treated the airborne division may have stemmed from being ordered to leave a trained and combat experienced parachute regiment in Italy with Fifth Army as the division sailed for England when a separate airborne regiment could perform the mission. Ridgway's "principles" highlighted aspects of the doctrinal employment of airborne troops with the addition of lessons learned from experimentation and combat operations.

In November 1943, the 82d A/B Division minus the 504th PIR departed for Scotland in order to prepare for Operation Neptune as part of Operation Overlord and the invasion of France. The 504th PIR remained under Fifth Army in Italy until 10 April 1944 and finally arrived in England on 23 April 1944.⁵⁷ Established airborne doctrine focused on air landing forces, yet in two division airborne operations, the 82d A/B Division had yet to conduct an airborne operation involving a glider assault. The mass employment of parachute troops had a moderate level of success, but still required additional refinement in order to effectively mass paratroopers. Having survived the "Swing Board" and the results of the Knollwood Maneuvers, the airborne division had endured to prove its worth as a division; the Normandy coast of France would provide this opportunity.

⁵⁷Stanton, 263.

CHAPTER 4

LESSONS LEARNED

In 1942, Col. Lee traveled to England to advise the Allied planners on how airborne operations could support the amphibious invasion of Europe. After returning to the Airborne Command, he recommended to Lt. Gen. McNair the formation of airborne divisions to meet the challenge of the upcoming European invasion. The invasion of Europe, which Allied planners later named Operation Overlord, was the impetus for the formation of the airborne division. Operations Torch, Husky, and Avalanche had varying levels of success, but all contributed to the refinement of airborne operations. The size and complexity of airborne operations increased over time. Airborne leaders believed that succeeding airborne operations were better than the previous; however, some Allied planners did not believe a division-sized airborne operation was capable of success and thus constituted an ineffective use of limited resources. A report circulated among commanders which stated that “undue dependence on airborne effort must only too often lead to disappointment or even disastrous consequences for land forces.”¹

Although, there were numerous cynics among Allied commanders and staff, Generals Marshall, Eisenhower, Bradley, and other key leaders were confident in the ability of the airborne divisions to accomplish their missions. Marshall stated that “[t]he value of airborne forces in Overlord would be immense, and would enable us to seize quickly and control ports which could not otherwise be used.”² As a testament to

¹Gordon A. Harrison, *Cross-Channel Attack* (Washington, DC: U.S. Army Center of Military History, Government Printing Office, 1951), 183

²*Ibid.*, 184.

Marshall's confidence in the airborne divisions, although beyond the capability of the existing divisions, he suggested to Eisenhower that all three airborne divisions drop on Paris simultaneously as the amphibious landings.³ Additionally, Gen. Bradley told Brig. Gen. Gavin that he would not conduct an amphibious assault without airborne forces in front of him.⁴ The airborne divisions, having won the confidence of key Allied leaders, would have the opportunity to operate as complete divisions and participate in the battle for which they were created by the War Department.

Operation Neptune

On 15 June 1944, the War Department published a revised version of Field Manual 100-5, *Operations*. Although the War Department published the field manual in June 1944, too late for any of the Allied planners to have used it for reference in its final form, the concepts within it derived from principles already established in Field Manual 31-30, *Tactics and Technique of Air-borne Troops* and those currently in use. The 1944 publication of *Operations* had an entire chapter dedicated to airborne operations. The previous 1941 publication of *Operations* included airborne operations as part of troops transported by air. The definition of airborne forces in *Operations* stated that "(t)hey [airborne forces] should not be confused with other ground units, many of which may be transported by air, but which are not specifically organized, trained, nor equipped for this method of movement."⁵ The language used and the inclusion of airborne operations as a

³Devlin, 355.

⁴Gavin, *On to Berlin*, 84.

⁵War Department, Field Manual 100-5, *Operations* (Washington, DC: Government Printing Office, 15 June 1944), 290.

chapter separate from the movement of troops by air in the 1944 publication of *Operations* indicates that the earlier view within the War Department that airborne operations were simply the employment troops transported by aircraft was evolving into an operational concept in itself.

Operations, published in 1944, listed surprise as the first of five criteria required to secure maximum effectiveness of airborne troops.⁶ Although the concept of surprise was a basic military concept, the publication of *Operations* in 1944 was the first time surprise specifically applied to airborne operations in any of the doctrinal documents.

In a memo dated 1 December 1943 to Lt. Gen. McNair, Maj. Gen. Ridgway, commander of the 82d A/B Division, recommended changes to the airborne division table of organization in order to better suit the airborne division for combat in Europe. He called for the addition of eight to nine thousand troops, which would have effectively doubled the size of the airborne division.⁷ Lt. Gen. McNair rejected increasing the size of the airborne division and chose not to address the issue as he still believed that the airborne division's utility was in being a small and easily transportable force.⁸ The slender Infantry component of the airborne division proved to be somewhat inadequate for operations in Sicily and Italy.

The missions assigned to the airborne divisions for Operation Neptune were beyond the capabilities of an airborne division as established under Table of Organization

⁶Ibid., 291.

⁷Kent Roberts Greenfield, Robert R. Palmer, and Wiley I. Bell, *The Organization of Ground Combat Troops* (Washington, DC: U.S. Army Center of Military History, Government Printing Office, 1947), 349.

⁸Ibid.

71, *Airborne Division*. For Operation Neptune each airborne division had an additional separate parachute infantry regiment attached which in effect made the airborne divisions for Operation Neptune similar in size and capabilities to Maj. Gen. Ridgway's proposal. The 82d A/B left in Italy a regimental combat team formed around the 504th PIR. The 504th RCT consisted of the 504th PIR, 376th PFAB, and C Company of the 307th Parachute Engineer Battalion.⁹ By the time the 504th RCT reached England the heavily attritted RCT did not arrive in time to absorb replacements and train for the Normandy mission.¹⁰ Short one parachute infantry regiment, the 507th and 508th PIRs, which were separate regiments, joined the 82d A/B for Operation Neptune. Thus the 82d employed the 505th, 507th and 508th PIRs as well as the 325th GIR and supporting artillery and service companies. The 506th and 501st PIRs attached to the 101st A/B Division augmenting the 502d PIR, 327th GIR, 401st GIR, and supporting battalions.

In mid-1944, glider infantry regiments consisted of only two battalions. Four months prior to Operation Neptune, airborne planners split the two battalions of the 401st GIR; attaching the 1st battalion to the 327th GIR and the 2d Battalion to the 325th GIR.¹¹ The attachment of a third battalion to both the 325th and 327th GIRs created glider infantry regiments comparable in size and capability to a parachute infantry regiment. This change gave the 82d and 101st A/B Divisions a common organizational structure which had not been the case with their organically assigned units. The 101st A/B previously followed the T/O 71 organization of two glider regiments and one parachute

⁹Devlin, 359.

¹⁰Ibid., 362.

¹¹Ibid., 365.

regiment while the 82d had two parachute regiments and one glider regiment. The attachment and reorganization of units for Operation Neptune made both airborne divisions the same. The regiments formed regimental combat teams as they had for operations in Sicily and Italy with supporting artillery, engineers, and the support units. Each RCT had a specific drop or landing zone in order to preserve unit integrity after landing, but because of the widely dispersed parachute drops the organization of the regiments was greatly confused during the first several days of action.

The equipment the parachute divisions used in Operation Neptune was generally unchanged since the creation of the airborne division in 1942 with the exception of the distribution of the M1 rocket launcher, which, despite its limited effectiveness against German armor, did provide airborne troops some protection. Unlike airborne operations in Sicily and Italy, the entire division to include the glider regiments and supporting glider troops participated in Operation Neptune. The gliders successfully delivered a significant amount of heavy equipment not suited for delivery by parachute, and a large number glider troops, into battle. Despite the delivery of artillery, radios, and engineer equipment by parachute and glider, by the end of D-Day more than 60 percent of the heavy equipment was missing, damaged, or destroyed.¹² The fighting conducted by airborne troops was done predominantly with light equipment and individual weapons.

Early plans for Operation Overlord called for company and battalion sized combat team jumps to neutralize German shore batteries in support of the amphibious landings. This plan did not employ airborne forces in mass. The 1944 publication of *Operations* included mass as the second criteria required to secure maximum effectiveness of

¹²Devlin, 412.

airborne troops.¹³ In fact, the revised publication of *Operations* also did not include the “use of parachute troops in small numbers for sabotage or special missions” as did the 1941 publication.¹⁴ Apparently the scatted parachute drops during Operations Torch and Husky and the disaster incurred by the 509th during Operation Avalanche highlighted the importance of mass in airborne operations. Additionally, the successful drops by the 504th and 505th during Operation Avalanche to reinforce the Salerno beachhead demonstrated how massed airborne troops could decisively affect a battle. Ignoring doctrine and the pleas of airborne commanders, the original plan for Operation Overlord that called for dispersing airborne troops in small drops in order to conduct commando type attacks persisted until early 1944. On 7 February 1944, Eisenhower proposed landing both U.S. and British airborne divisions on the night before D-Day followed by the landing of a second U.S. airborne division on the night of D-Day.¹⁵ The projected availability of transport aircraft for Operation Overlord provided only enough transport for one and two thirds divisions. The resulting plan called for the drop of the 101st A/B Division behind Utah Beach, two regiments of the 6th Airborne Division to drop east of the Orne River to protect the British flank the night before D-Day while the 82d A/B Division was to drop in vicinity of St. Sauver-le Vicomte in order to block the St. Lo-d’Ourville corridor on the night of D-Day.¹⁶ The plan changed once again in April 1944 when planners learned that enough transports would be available to transport both U.S.

¹³War Department, Field Manual 100-5, *Operations* (15 June 1944), 291.

¹⁴War Department, Field Manual 100-5, *Operations* (22 May 1941), 243.

¹⁵Harrison, 184.

¹⁶Harrison, 185.

airborne divisions as well as the British 6th A/B Division.¹⁷ Allied intelligence learned that the German 91st Division moved into the Cotentin in the area where the 82d A/B Division intended to drop. The movement of the 91st Division caused Allied planner to adjust the plan for Operation Neptune for the final time which moved the 101st drop zones east of the Merderet River and the 82d to the west of the river. This placed both divisions in close proximity to one another on favorable terrain for airborne operations. Thus, the final version of Operation Neptune massed two airborne divisions in a relatively small area astride the Merderet River.

Specifically, the 101st A/B Division had the mission of seizing the western area behind the Utah beachhead between St. Martin-de-Varreville and Pouppeville. The 502d PIR with support of the 377th PFAB was to seize the northern two causeways from the beach while the 506th minus one battalion was to seize the two southern exists from the beach.¹⁸ The 82d A/B Division had the task of clearing the western portion of the beachhead and establish a bridgehead on the west bank of the Merederet River. The 505th was to seize the town of Ste. Mere Eglise and secure the river crossing point near La Fièrre and Chef-du-Pont. The 507th and 508th PIRs were to drop west of the Merederet River and secure the western portion of the bridgehead. The wide scattering of these regiments prevented them from seizing the bridges across the Douve and Merederet Rivers on D-Day in advance of the seaborne forces. On 9 June, the largely intact 2d battalion, 325th GIR and 2d Battalion, 401st GIR after landing on D-Plus-1 attacked the

¹⁷Ibid., 186.

¹⁸Ibid., 280.

German defenders and successfully seized the La Fièvre Bridge, which was a D-Day objective.

The ability of the aircraft to locate the drop and landing zones directly affected the ability of airborne troops to effectively mass. Since the scattered drops on Sicily, the 82d A/B Division had begun to train ad hoc pathfinder units to mark the parachute drop zones as well as glider landing zones. Pathfinders trained to mark drop zone with a series of five lights placed in a “T” shape with a Eureka beacon at the head of the “T”.¹⁹ They marked glider landing zones with seven pairs of Holophane lights along the landing strip every 50 yards.²⁰ The lead aircraft in each serial had a Rebecca device to receive the Eureka beacon signal and guide the serial to the correct drop or landing zone.²¹ Once over the correct drop zone, the aircrew of the lead aircraft would illuminate a signal lamp in the rooftop plexiglass astrodome to alert the trail aircraft that the serial was over the drop zone and to illuminate their green jump-signal lights.²² Aircraft towing gliders used a similar method to signal the release of gliders.

The proximity of England to German occupied Europe and the massing of Allied forces in England highlighted the inevitability of an Allied assault. To the chagrin of Allied planners, Major F. O. Miksche, a citizen of Czechoslovakia who was serving in the French Forces, in 1943 published *Paratroops*. His book discussed the future of airborne forces and elaborated on a hypothetical invasion of the European continent from

¹⁹Flanagan, 160.

²⁰Ibid.

²¹Devlin, 366.

²²Ibid., 367.

England involving airborne troops. His discussion of the topic happened to include the proposed drop and landing zones Allied planners intended to use in Operation Neptune. After some investigation, Allied authorities determined that Maj. Miksche did not receive any of his information from leaks from within the Allied headquarters and decided to proceed with Operation Neptune.

If the possibility of an Allied airborne assault targeting northern France was intuitive to a French author, it was quite obvious to German forces. Through intelligence sources and aerial reconnaissance Allied airborne planners knew that German forces were preparing anti-paratrooper defenses in the Cotentin area where Operation Neptune called for the insertion airborne troops. Allied leaders knew German coastal units emplaced *Rommelspargel* (Rommel's asparagus) which were poles six to twelve inches in diameter and eight to twelve feet long anchored several feet into the ground and spaced 75 to 100 feet apart on areas suitable for glider and parachute assaults.²³ In some cases barbed wire connected the poles and also connected to mines and artillery shells.²⁴ A glider force unfortunate enough to land on a field of *Rommelspargel* would be devastated. Additionally, intelligence reported the presence of machinegun positions established around areas which were suitable for glider and parachute assaults. It became evident to Allied airborne planners that German planners also understood the possibility of an airborne assault along the northern coast of France and prepared accordingly.

Operation Neptune began at 2300 hours on 5 June 1944 when six serials of three aircraft each took off loaded with pathfinders, one hour and twenty minutes ahead of the

²³Gavin, *On to Berlin*, 92.

²⁴*Ibid.*, 94.

main body.²⁵ Poor visibility prevented the pilots from locating the designated drop zones. The pathfinders successfully located Drop Zone “C” for the 101st A/B Division and Drop Zone “O” for the 505th PIR. Pathfinders that missed their designated drop zones did not mark the drop zones or activate their PPN1 Eureka beacons because they did not want to misguide aircraft from the correct drop zones. Pathfinders that did manage to locate the correct drop zones were unable to mark the drop zones because of enemy activity.²⁶ Without guidance to the drop zones, the aircrews had great difficulty locating the drop zones, a problem compounded by German antiaircraft fire. The resulting drops scattered paratroopers across the entire Cotentin Peninsula.

The 82d A/B Division’s paratroopers were scattered widely on both sides of the Merderet River. Pathfinders were not able to mark drop zones for the 507th and 508th PIRs. Most pilots searched for the nonexistent markers, overflowed the drop zones, and dropped their jumpers when they realized that there were no markers.²⁷ The 507th PIR drop resulted in two planes finding the drop zone, twelve planes dropping twenty miles from the drop zone, and the remaining aircraft dropping their paratroopers in the Merderet River and adjoining swamps. Many paratroopers drowned in the swamps when the weight of their parachute harnesses and equipment pulled them under the water.²⁸ The 508th drop was equally scattered with seven aircraft finding the drop zone, five dropping fifteen miles north of the DZ, nine dropping east of the Merderet River in the 101st area,

²⁵Devlin, 380.

²⁶Ibid., 381.

²⁷Harrison, 290.

²⁸Devlin, 387.

and the remainder scattered across Normandy.²⁹ The 505th PIR fared much better than the other regiments in the 82d A/B in that pathfinders were able to mark the drop zone and the regiment was able to jump on the correct drop zone, which fortunately was not heavily defended by the enemy.³⁰

The 101st A/B Division's drops were only slightly better than those of the 82d. Not a single aircraft from the 502d found the drop zone.³¹ The 1st and 2d Battalions of the 506th PIR had only nine aircraft find the drop zone. Second Battalion landed generally together, but three miles north of the designated drop zone. Third Battalion dropped over a concentration of German troops which was ready to defend against parachute troops. The majority of 3d Battalion fell to German machineguns on the drop zone. Only two planeloads from the battalion that missed the drop zone and landed elsewhere managed to survive to pursue the battalion's mission.³² In contrast to the scattered drops of most regiments, the 501st PIR had almost all of its paratroopers land on the drop zone, but Germans were alert and prepared to defend against a parachute assault.³³ The German defense disrupted the 501st PIR's assembly and only a small force departed the drop zone able to execute the regiment's mission.³⁴

²⁹Ibid., 388.

³⁰Harrison, 289.

³¹Devlin, 392.

³²Devlin, 398.

³³Ibid., 392.

³⁴Ibid., 400.

Unlike parachutist who reached the battlefield as individuals, glider troops arrived on the battlefield in squad size elements with all of their equipment, prepared to fight. Operation Neptune was the first time glider landings were an integral part of the airborne assault. Despite the availability of gliders and glider troops, a large number of glider troops actually landed with amphibious forces.³⁵ A significant factor affecting the use of gliders troops during Operation Neptune was an extreme shortage of glider pilots. Normally each glider had a trained pilot and copilot. Glider copilots conducting operations in D-Day were typically glider troops to whom the pilot provided a rudimentary explanation of how to fly and land a glider just prior to takeoff.³⁶ Operation Neptune called for four glider landings over the first 24 hours.

The first glider assault was a mixed glider force to land at 0400 hours just before dawn on D-Day.³⁷ This consisted of CG-4A gliders, carrying artillery, antitank guns, and communications equipment onto LZ E.³⁸ The initial glider assault used the smaller CG-4A Waco gliders as the glider pilots received more training on the Waco gliders than the larger Horsa gliders, albeit the CG-4A training was somewhat incomplete. Airborne commanders and their staffs felt that night assault should consist of the most competent glider pilots flying the gliders with which they were most competent. Operations in Sicily and Italy illustrated the importance of antitank weapons, as the M1 rocket launcher, the “bazooka,” and the M9 antitank rifle grenade were generally ineffective against German

³⁵Ibid., 374.

³⁶Ibid.

³⁷Ibid., 403.

³⁸Devlin, 372, 404.

tanks. Airborne commanders insisted that they have antitank guns and other supporting equipment arrive early in the operation. Airborne commanders also learned from earlier operations that they required the more powerful radios which the gliders carried into battle in order to direct the dispersed and decentralized airborne forces. Brig. Gen. Donald Pratt, the Assistant Division Commander of the 101st A/B, was also to arrive as part of the first glider assault.³⁹

The second glider assault in Operation Neptune was scheduled for D-Day at 2100 hours onto LZ W.⁴⁰ This second glider assault at dusk permitted the use of the larger Horsa gliders which could carry more cargo and personnel as there would still be some daylight to aid the glider pilots in finding their landing zones. Arriving an hour earlier than planned, the gliders began to land on the LZ which was not secure. The glider troops were able to quickly disembark their gliders, rapidly assemble, secure the LZ, and move to secure their objectives.⁴¹

The third glider assault was scheduled for D-plus-1 at 0710 hours. The 325th GIR with the 2d Battalion, 401st GIR attached was to assault LZ W.⁴² A second wave of glider troops from the 325th GIR was to land at 0900 on the same LZ.

Despite the availability of three glider regiments for Operation Neptune, a combination of limited glider pilots and tug aircraft limited the ability to transport glider

³⁹Ibid., 372.

⁴⁰Ibid., 405.

⁴¹Devlin, 407.

⁴²Ibid., 372.

troops to the battle by air. The remaining elements of the 327th GIR and 1st Battalion, 401st GIR went by sea and were to land on the beach.⁴³

Operation Neptune called for the employment of massed parachute and glider troops. Although the parachute drops were scattered, the number of parachute troops on the ground in a condensed area permitted enough troops to form up into units or ad hoc elements, most often formed by officers, to prosecute their assigned missions. Gavin had a meeting with his battalion and regimental commanders after Operation Neptune in August to discuss the operation. Despite the fact that the pathfinders failed to mark the parachute drop zones and were only able to mark the glider landing strips for the follow on landing, Gavin claims that all of the commanders agreed that the pathfinder aids were excellent.⁴⁴ As in Operation Husky, the concept of marking the drop zones and emplacing beacons on which the aircraft could home had failed in execution.

The few parachute regiments and battalions that dropped in mass encountered heavy German fire on the drop zone. Fire from prepared German anti-parachute defenses significantly disrupted the assembly of the 501st PIR, which landed on the correct drop zone, and also destroyed the 3rd Battalion, 506th PIR in detail on their drop zone. A separate study of the German defenses along the Normandy coast may provide some insight into how the airborne forces would have fared in their assault if they had landed as planned in mass on consolidated drop zones. It is possible that if the parachute regiments would have sustained significantly more casualties from prepared German anti-

⁴³Ibid.

⁴⁴Gavin, *On to Berlin*, 132.

parachute defenses if the airborne troop's assault executed the assault as planned. The parachute assault appears not to have surprised the German defenders.

Despite the emphasis placed upon the importance of the parachute regiments, the glider forces performed well during their first glider assault. The majority of glider troops that conducted the glider assault arrived in daylight, generally landed in good order, and able to fight shortly after landing as they were intact units and did not have to search for equipment bundles in order to equip themselves or rally widely dispersed troops.

The organization of the airborne division changed again in August 1944 with a revised publication of T/O&E 71, *Airborne Division*. Conceived before the Normandy invasion, this change actually reduced the size of the airborne division and would not withstand scrutiny after airborne commanders applied the lessons learned from Operation Neptune and the subsequent airborne assault into Holland.

Operation Market

After the Allies broke out from the beachhead in Normandy and moved to secure France, several airborne operations were planned after Operation Neptune, but the rapid advance of Allied ground forces precluded their execution. Some of the proposed airborne operations included assaulting Tournai and Liège, Belgium in August.⁴⁵ In early September 1944, Field Marshal Bernard Montgomery proposed Operation Market-Garden as a combined airborne and ground assault to seize a series of bridges in Holland in order to break through German defenses and open the way into Germany. Operation Market was the airborne portion of the operation.

⁴⁵Gavin, *On to Berlin*, 143.

Field Manual 31-30, *Tactics and Technique of Air-Borne Troops*, published in 1942, remained the primary document that detailed how to conduct airborne operations. Additionally, Field Manual 100-5, *Operations*, published three months prior to Operation Market-Garden in June 1944, expanded its coverage of airborne operations with the addition of the chapter “Airborne Troops.” The chapter opens with the definition of airborne forces:

Airborne forces are ground forces which are specially organized, trained, and equipped to utilize air transportation for entry into combat. Normally such units will include parachute and glider-borne elements. They should not be confused with other ground units, many of which may be transported by air, but which are not specifically organized, trained, nor equipped for this method of employment.⁴⁶

Although the 1944 publication of *Operations* only dedicated five pages to airborne operations, the inclusion as a chapter, separate from air movement of troops as in previous versions of *Operations*, indicates a developing realization that airborne operations were more complex than simply delivering troops to combat by parachute and glider. *Operations* contained most of the points Maj. Gen. Ridgway previously made in a letter with the subject “Summary of Principles Covering Use of The Airborne Division” directed to Gen. Eisenhower in 1943. The War Department acknowledged and formally placed the airborne principles and methods that had evolved over time and through lessons learned in combat into *Operations*, the primary War Department doctrinal document. Although written into formal doctrine at the highest levels all Allied commanders did not necessarily heed the principles.

⁴⁶War Department, Field Manual 31-30, 290.

The organization of the airborne divisions for Operation Market-Garden did not change significantly from those used in Operation Neptune. The 504th PIR which reached England too late to participate in Operation Neptune replaced the 507th PIR within the 82d A/B Division. Both the 82d and 101st A/B Divisions consisted of three parachute infantry regiments and their organic glider infantry regiment with one of the two battalions of the 401st GIR attached to each organic glider infantry regiment. Both divisions also had their complement of parachute and glider field artillery and supporting units.

Equipment within the parachute division changed very little in the interim between Operation Neptune and Operation Market. Based on the limited capability of airborne forces to defeat German armored vehicles, at least within the 82d A/B Division, 700 troopers each carried an antitank mine into battle which raised the number of mines available for employment on D-Day to 2000 mines.⁴⁷ In addition to antitank mines, both the 82d and 101st A/B Divisions employed 6 pounder (57-mm) antitank guns of the same model employed by British airborne forces. Official requests from airborne commanders to the War Department for the increased firepower of a 57-mm antitank gun resulted in the War Department determination that the U.S. 57-mm antitank gun was not suited for delivery by glider and left airborne forces to continue to use the generally ineffective 37-mm antitank gun. The 57-mm antitank guns were not listed on any table of organization

⁴⁷Gavin, *On to Berlin*, 152.

in use at the time of Operation Market; however, the airborne divisions did manage to acquire many of these guns from the British for use in Holland.⁴⁸

Operation Market-Garden was a combined airborne and ground assault deep into Holland to break through German defenses and enter Germany. The plan called for three airborne divisions to seize a series of bridges from Eindhoven through to Arnhem. The British were to jump and seize the bridge in Arnhem while the U.S. airborne divisions seized bridges leading to Arnhem across Holland.

The 101st A/B Division was to seize key terrain from Eindhoven to Veghel and the bridges at Zon, Sait Oedenrode, and Veghel.⁴⁹ The 82d A/B Division was to seize key terrain over the center ten miles of the route across Holland to Arnhem. They were to seize the Waal River Bridge at Nijmegen, Maas River Bridge at Grave, and the four bridges over the Maas-Waal Canal. Additionally, the 82d was to secure the Groesbeek Heights which was, although only 300 feet high, the highest point in the area and thus dominated the surrounding terrain. In particular the Groesbeek Heights overlooked the Reichswald, a forest which the Allies suspected contained German armored forces.⁵⁰

The plan for Operation Market called for airborne ground forces linking up with the airborne forces in three to five days, which was in accordance with airborne doctrine. The plan called for a daylight operation on fewer and larger drop zones than previously

⁴⁸In December 1944 the U.S. 57-mm antitank gun became authorized equipment within the airborne division, most likely as a result of the demonstrated ability to deploy the piece by glider and employ it effectively against German armored vehicles during Operation Market.

⁴⁹Devlin, 474.

⁵⁰Ibid., 472.

employed. Airborne commanders did not want to repeat the scattered parachute drops of Sicily and Normandy. The larger drop zones would help consolidate their troopers and make the zones easier to identify for the pilots. The terrain in Holland was, in the words of Maj. Gen. Gavin, “flat as a billiard table” and conducive for massing paratroops.⁵¹ The terrain was open and supported large landing zones for gliders. The flat terrain, cut by rivers and spotted with villages and towns, made it much easier to navigate than during night operations over rougher terrain. Planners decided that a daylight operation was feasible because the Allies would have air superiority over and around the drop and landing zones. The daylight operation was also preferable because of the large number of new and inexperienced aircrews needed to fly the massive fleet of aircraft required to transport three airborne divisions and to replace aircrews lost in combat.

The U.S. Army Air Forces and the British Royal Air Force (RAF) felt that they could provide air superiority over the operational area in Holland. They supported Operation Market-Garden with more than 1,250 fighters. The fighters had the mission of intercepting German fighters and of destroying antiaircraft guns. More than 1,000 Allied bombers targeted German antiaircraft emplacements and other German ground forces.⁵² The armada of bombers included 200 Lancasters, 23 Mosquitos from the RAF and 852 B-17s, which dropped 3,140 tons of bombs.⁵³ The Allied air forces were able to effectively ground the German Luftwaffe and destroy many antiaircraft batteries.

⁵¹Gavin, *On to Berlin*, 149.

⁵²Flanagan, 246.

⁵³Devlin, 480.

Prior to the main body of the aircraft arriving over Holland, Pathfinder Teams jumped and marked the drop and landing zones with colored panels and Eureka homing beacons. German antiaircraft fire was able to shoot down one of the C-47s carrying pathfinders. The well-marked drop zones, which were easily identifiable in daylight, resulted in paratroopers landing in on the correct drops zones in tight formations. More than 80 percent of the 101st A/B Division landed on the correct drop zone. The largest deviation for the plan was 38 gliders from the 82d A/B Division that landed a mile from the correct landing zone.⁵⁴

The Allied airborne assault consisted of more than 1,500 C-47s and 500 gliders of various types.⁵⁵ These aircraft transported more than 20,000 troops, 511 vehicles, 330 artillery pieces, and 590 tons of other equipment and supplies. The 82d A/B Division's assault consisted of 7,250 troops and their equipment transported by 479 C-47s and 88 gliders. The 101st A/B Division's assault consisted of 6,769 troops transported by 424 C-47s and in one hour landed 70 gliders of which 53 landed without incident.

Operation Market employed more gliders than any previous operation. In addition to the initial glider landings on D-Day, on D-Plus-1 the 82d A/B Division landed 450 gliders in a 30 minute period between 1400 and 1430 hours. The gliders successfully delivered essential heavy equipment which could not be delivered by parachute. The 319th GFAB recovered all of its 12 howitzers and all of its 39 jeeps. Although not faring as well as the 319th GFAB, the 456th PFAB recovered 10 of its 12 howitzers and 22 of its 33 jeeps. As an example of the gliders' ability to deliver equipment, in the 82d A/B

⁵⁴Flanagan, 247.

⁵⁵Ibid., 246.

Division, D Battery, 80th Antiaircraft Battalion successfully recovered of all eight of its 57-mm antitank guns. Additionally, medical, engineer, and signal units recovered 39 additional jeeps and other heavy equipment.⁵⁶

The 82d and 101st A/B Divisions fought to secure key bridges in their areas to provide a secure road over which the British XXX Corps could reach the British 1st Airborne Division in Arnhem. Both divisions secured the critical bridges and fought off German counterattacks intended to cut the single road linking all the divisions. After a week of heavy combat the 1st Airborne Division in Arnhem had yet to secure the bridge over the Nederrijn River and desperately needed relief. Persistent German counterattacks had slowed XXX Corps advance to Arnhem. On 24 September, Field Marshal Montgomery decided to evacuate the remnants of the beleaguered 1st Airborne Division from Arnhem because he felt XXX Corps could not reach Arnhem before the division was completely destroyed. The 1st Airborne Division began to evacuate Arnhem the next day. Although Operation Market-Garden was effectively complete, Montgomery did not release the U.S. divisions to U.S. control; the 82d and 101st A/B Divisions remained in frontline combat with German forces. Only after the British had completed clearing the approaches to the port in Amsterdam did he return the U.S. airborne divisions to U.S. control on D-Plus-57 for the 82d A/B Division and D-Plus-71 for the 101st A/B Division.⁵⁷

The ability to mass in close proximity to their D-Day objectives permitted the airborne divisions' rapid execution of assigned missions on the ground. The use of

⁵⁶Gavin, *On to Berlin*, 168.

⁵⁷Devlin, 513.

several large drop zones in the daylight reduced the time required to assemble forces on the ground. This resulted in units such as the 501st PIR being able to seize the bridges over the Aa River and Willems Canal within three hours of landing.⁵⁸ In contrast, the British 1st Airborne Division commander Maj. Gen. Robert "Roy" Elliott Urquhart chose drop and landing zones eight miles from his objective in Arnhem. As a result, the German forces had time to prepare by positioning forces to defend the bridge. The British airborne troops were never able to regain the initiative and failed to secure the bridge. The U.S. drop zones were much closer to their objectives. In a period of two hours from 1300 to 1500 hours on D-Day, 14,000 U.S. troops were in on the ground in Holland conducting their missions to seize bridges and secure key terrain.

The expanded use of glider forces permitted more heavy equipment to reach the battlefield intact than in previous operations. The majority of artillery and jeeps reached troops on the ground intact. Additionally, gliders were able to transport glider infantry troops to battle intact in squad-sized elements prepared to fight almost immediately after disembarking from the glider.

The sustained combat that followed after the rush to Arnhem took a major toll on the airborne divisions. The airborne divisions were neither manned nor equipped for sustained combat as highlighted by Maj. Gen. Ridgway's "Summary of Principles Covering Use of The Airborne Division" as well as in FM 100-5, *Operations* and FM 31-30, *Tactics and Technique of Air-Borne Troops*. The airborne divisions suffered as a result of their continued employment in Holland as regular line infantry troops.

⁵⁸Ibid., 487.

In September 1944, an airborne division was authorized 8,596 troops.⁵⁹ From 17 to 25 September 1944 the 82d A/B Division lost 1,432 troops killed and missing while the 101st A/B Divisions lost 2,110 troops.⁶⁰ The 82d and 101st A/B Divisions sustained 16.7 and 24.5 percent casualties, respectively. In the ensuing combat in Holland, the airborne divisions continued to accumulate casualties. When the last elements of the 82d left Holland on 13 November 1944, the division had lost an additional 1,682 troops for a total of 3,114 troops which was 36.2 percent of the division's authorized strength.⁶¹ The 101st, which remained in Holland two weeks longer than the 82d, absorbed an additional 1,912 casualties for a total of 4,022 troops killed or missing which was 46.8 percent of authorized strength of the division.⁶² The airborne division was not manned and equipped commiserate for such sustained combat nor were additional assets provided by other ground units. In Ridgway's "Principles" he stated that in sustained ground combat "the airborne division must be provided with additional motor transportation, and medical, engineer, signal, and quartermaster support. Its own organic means are wholly inadequate for sustained mobile ground operations." As a result of misemployment, the 82d and 101st A/B Divisions took heavy losses and would require considerable time to reconstitute their forces and be available for further missions. As fate would have it, neither of these divisions would be afforded the opportunity to effectively reconstitute

⁵⁹War Department, Table of Organization No. 71, *Airborne Division, Change 2* (Washington, DC: Government Printing Office, 24 February 1944).

⁶⁰Flanagan, 260.

⁶¹*Ibid.*

⁶²*Ibid.*

before they were once again ordered into combat. The continued non-doctrinal employment of the airborne divisions would give airborne leaders reason to propose major changes to the organization and the equipment within the airborne division in order to better prosecute sustained combat beyond five days.

While both the 82d and 101st A/B Divisions were in France recovering from operations in Holland, Lt. Gen. Ridgway sent Maj. Gen. Taylor to Washington, D.C. to represent the XVIII A/B Corps in proposed changes to the Tables of Organization and Equipment while he testified in an investigation regarding the attack on Pearl Harbor.⁶³ As after all previous operations, airborne leaders began to conduct reviews of action in Holland and combine lessons learned from France and the Mediterranean. The airborne division had to change in order to conduct sustained combat as it was not practical or in most cases possible to withdraw airborne troops after a short five days in combat. In order to fight less like a light division and more like a regular infantry division the airborne division would need more troops, even heavier equipment, and more motor transport for greater mobility.

⁶³Devlin, 515.

CHAPTER 5

FINAL EVOLUTION

On 16 December 1944, German forces attacked in force into the Ardennes area of Belgium in order to break through the Allied lines. The Germans had conducted one last major offensive; the Battle of the Bulge. At this time the XVIII Airborne Corps was the theater reserve force. The 82d and 101st A/B Divisions, which both sustained heavy losses during Operation Market, were refitting in camps in France. The 17th A/B Division was in England where it had been conducting training since its arrival on 25 August 1944.¹ On 17 December, Maj. Gen. Gavin, the acting Corps Commander, as Lt. Gen. Ridgway and other key leaders were in England and elsewhere, ordered the 82d and 101st A/B Divisions to Belgium to support First Army stop the German advance. The 82d A/B Division remained in the line until relieved by the 99th Infantry Division on 6 February 1945 and the 101st A/B Division defended the city of Bastogne until 26 January when it relocated to Alsace until it returned to its camps in France in late February.²

On 17 December 1944, prior to Ridgway returning to France from England, he ordered Maj. Gen. William M. Miley, who as a Major had commanded the 501st Parachute Infantry Battalion when it was activated in September of 1940, to move the 17th A/B Division from England to France as soon as possible for employment in the Ardennes. Due to poor weather, Miley was not able to have the division moved to France

¹Office of the Theater Historian, *Order of Battle of the United States Army, World War II, European Theater of Operations, Divisions* (Paris, France: Government Printing Office, December 1945), 96.

²Flanagan, 281.

and ready for action until 24 December 1944.³ On Christmas Day, XVIII A/B Corps attached the 17th A/B Division to Third Army with which it fought until 10 February 1945 when it was relieved.⁴ The 17th A/B Division's first action in combat was not an airborne assault, but meeting German forces as regular infantry troops.

Operation Varsity

Following the XVIII A/B Corps operations in the Ardennes, planning for a new airborne assault began. Planners intended Operation Eclipse to seize Berlin with an airborne assault by the 82d and 17th A/B Divisions as well as the British 6th Airborne Division.⁵ Planning for this operation continued until Gen. Eisenhower abandoned the capture of Berlin by U.S. and British troops and ceded its capture to Russian forces.⁶ Despite the canceled airborne assault of Berlin there was still another operation that would warrant the use of airborne forces; the crossing of the Rhine River.

Airborne doctrine in the spring of 1945 was unchanged since the publication of FM 100-5, *Operations*, on 15 June 1944. FM 31-30, *Tactics and Technique of Air-Borne Troops* had not been updated since its original publication in 1942 when the War Department activated the first airborne divisions. Despite the lack of updated doctrine, the same basic principles still applied to airborne operations in 1945 as they did in 1942. Although the principles of airborne operations remained the same the utilization of the

³Office of the Theater Historian, 96.

⁴Flanagan, 284.

⁵Ibid., 281.

⁶Ibid., 285.

airborne divisions on the ground after the parachute and glider assault, in practice, had deviated from written doctrine in past operations. With increasing frequency, supported commanders would employ airborne forces for longer and longer durations after the airborne assault as line infantry forces. Doctrinally, airborne troops “should be employed only when they can be supported or relieved within a period of 3 to 5 days.”⁷ In previous operations the airborne forces were neither relieved nor provided adequate support in terms of additional motor transportation, and medical, engineer, signal, and quartermaster support, which then Maj. Gen. Ridgway listed in his “Summary of Principles Covering Use of The Airborne Division.”⁸ Since the first employment of an airborne division in combat airborne troops ended up fighting for weeks and in some cases months as regular infantry troops with limited, if any support, from outside the division.

The 17th A/B Division was activated on 15 April 1943 at Camp McCall, North Carolina and trained in the United States until August 1944 when it embarked for England.⁹ The division was originally organized in accordance with Table of Organization and Equipment 71, *Airborne Division* with two glider and one parachute regiment as well as two glider and one parachute artillery battalions. After combat in the Ardennes, T/O&E 71, published on 16 December 1944, called for a significant reorganization of the airborne division. This changed in turn also affected the majority of the subordinate tables of organization. The base structure of the division changed to two parachute infantry regiments and only one glider regiment. Additionally, the airborne

⁷War Department, Field Manual 100-5, *Operations* (15 June 1944), 291.

⁸Ellis, 136.

⁹Office of the Theater Historian, 96.

division gained a second parachute field artillery battalion. The major changes to T/O&E 71 formalized what had been practiced for several years. In all previous airborne assaults, the airborne divisions employed attached separate parachute and glider regiments and battalions to augment units assigned to the division. It was common practice by 1945 for an airborne division to employ one or more separate parachute infantry regiments and parachute field artillery battalions during an airborne assault.

The overall number of troops in the airborne division increased dramatically. The August 1942 troop authorization for the airborne division was 8,556.¹⁰ With the reorganization of the airborne division in accordance with the December 1944 revision of T/O&E 7-71T, *Airborne Division*, the number of troops in the division increased to 12,979 troops.¹¹ The airborne division, which was originally organized as a very small and lightly equipped force had grown to almost the size of a regular infantry division although equipped with lighter weapons and equipment.

Within the glider infantry regiment, the revised T/O&E 7-51T, *Glider Infantry Regiment* added a third battalion to the existing two glider infantry battalions as well as an antitank battery with 170 troops. Within each of the subordinate glider infantry battalions, each battalion gained a 160 troop heavy weapons company and added a glider infantry platoon to each company which previously only had two infantry platoons. Despite reduction of glider regiments from two to one, the overall size of the GIR increased from 1,554 to 2,978 troops. The revised glider regiment was effectively twice

¹⁰War Department, Table of Organization and Equipment No. 71, *Airborne Division* (Washington, DC: Government Printing Office, 1 August 1944).

¹¹War Department, Table of Organization and Equipment No. 71T, *Airborne Division* (Washington, DC: Government Printing Office, 16 December 1944).

the size of the previous organization. The reorganization of glider infantry troops resulted in the deactivation and consolidation of glider organizations, but not real loss of personnel.

Although the organization of the glider infantry regiment changed, the organization of the supporting glider field artillery did not. A parachute field artillery battalion contained three howitzer batteries which in turn could support the three parachute infantry battalions with a parachute infantry regiment. The addition of a second parachute infantry regiment to the airborne division also included the addition of a second parachute field artillery battery to provide supporting fires. As originally configured, the glider field artillery battalion contained two howitzer batteries which in turn could support the two glider infantry battalions within a glider infantry regiment. When the airborne division reduced its glider infantry forces to a single regiment of three battalions the supporting field artillery did not change accordingly. The same two glider field artillery battalions that initially support the four battalions from the two glider infantry regiments remained and in effect provided a 75-mm howitzer battalion that was not required to directly support an infantry battalion, but was still warranted as the overall number of glider troops in the airborne division had not changed.

The organization of parachute and glider infantry companies also changed as a result of the 16 December 1944 changes to T/O&E 7-37T, *Infantry Rifle Company, Parachute* and T/O&E 7-57T, *Infantry Rifle Company, Glider*. Within the parachute infantry company each of the three platoons gained an additional rifle squad, bringing their total to three, while the glider infantry company gained a third rifle platoon. These changes brought the glider and infantry rifle companies into line with regular infantry

companies throughout the Army that were comprised of three platoons of three squads each, with the exception that the parachute rifle platoons retained their 60-mm mortar squad.

Little new equipment entered into use within the airborne division with the exception of the fielding of new antitank weapons. The 17th A/B Division was the first divisions to receive the new 57-mm and 75-mm recoilless rifles. The 75-mm recoilless rifle was intended to replace the 57-mm antitank gun which was a towed piece and was only somewhat effective in defeating German armor. This new rifle was only 114 pounds and fired from a machine gun tripod.¹² A smaller recoilless rifle which was fielded to infantry troops within the parachute infantry regiments was the 57-mm recoilless rifle. This weapon weighed only 45 pounds and was espoused to be much more effective against German armored vehicles than the 2.36-inch rocket launcher.¹³ The glider infantry regiment traded its eight 37-mm antitank guns for eighteen 57-mm antitank guns distributed with nine in the Regimental Antitank Battery and three in each of the glider infantry battalions. Both the antiaircraft and parachute field artillery battalions upgraded their 37-mm antitank guns for the improved 57-mm antitank guns.

The lightweight M1 Carbine, although compact and easy to carry, had proved not as effective in combat as the M1 Rifle. In an effort to maximize the firepower of airborne troops, the 16 December 1944 publications of T/O&E 7-31T, *Parachute Infantry Regiment* and T/O&E 7-51T, *Glider Infantry Regiment* significantly increased the

¹²Charles B. MacDonald, *The Last Offensive* (Washington, DC: U.S. Army Center of Military History, Government Printing Office, 1993), 299.

¹³Ibid.

number of M1 Rifles in both the parachute and glider infantry regiments while reducing the number of M1 Carbines. The previous authorization within a parachute infantry regiment was 1,098 M1 Carbines and 859 M1 Rifles. The revised T/O&E authorized only 484 M1 Carbines and 1,869 M1 Rifles.¹⁴ In the glider infantry regiment the previous T/O&E authorized 814 M1 Carbines and only 683 M1 Rifles. The single glider infantry regiment that T/O&E 71, *Airborne Division* authorized, which was in effect the size of two earlier glider infantry regiments, had only 761 M1 Carbines, fewer than what the tables authorized for a single glider infantry regiment under the previous revision, but had 1,816 M1 Rifles.¹⁵ The M1 Rifle which previously was authorized for just over 45 percent of personnel in the infantry regiments was now authorized for almost 83 percent. The addition of 4,000 troops in airborne divisions after December 1944 resulted in the addition of more than 4,000 M1 rifles to the division's authorization. The seemingly simple change from a carbine to a rifle in itself is relatively insignificant, but on such a large scale it significantly increased the firepower of the airborne division, but also increases the logistic requirements within the airborne division as the Caliber .30 ammunition for the M1 Rifle was heavier and bulkier than an equal quantity of ammunition for the M1 Carbine.

Another area of key change in equipment was in the area of motor transport. The initial organization of the airborne division had very few motor vehicles. Ridgway

¹⁴War Department, Table of Organization and Equipment No. 7-31T, *Infantry Regiment, Parachute* (Washington, DC: Government Printing Office, 16 December 1944).

¹⁵War Department, Table of Organization and Equipment No. 7-51T, *Infantry Regiment, Glider* (Washington, DC: Government Printing Office, 16 December 1944).

identified after the first employment of the 82d A/B Division that airborne divisions would require motor transport support in order to conduct sustained combat operations. Although this requirement was written into FM 100-5, *Operations*, units supported by airborne divisions were more often than not unable to provide support to the airborne divisions. As a result of the need for motor transport for the airborne division, the revised T/O&E 71 added a large number of trucks to the division. T/O&E 7-31T, *Infantry Regiment Parachute* increased the regimental authorization of 15 1/4-ton and 15 2 1/2-ton trucks to 24 and 30 trucks respectively. This almost doubled the number of trucks in the parachute infantry regiment.¹⁶ The T/O&E 7-51, *Glider Infantry Regiment* authorized an increase from 21 to 187 1/4-ton trucks, 10 to 29 2 1/2-ton trucks, and one to 11 3/4-ton weapons carriers; an increase of more than seven times what the regiment was authorized in August 1944.¹⁷ The airborne quartermaster company also gained a large number of trucks and trailers. Prior to the revision of T/O&E 10-327, *Airborne Quartermaster Company* the transportation section within the company consisted of 30 1/4-ton trucks and trailers. The revised organization added three truck platoons each equipped with 16 2 1/2-ton cargo trucks and trailers.¹⁸ Throughout the airborne division's subordinate organizations tables of organization and equipment added trucks. In total, the airborne division's truck authorization increased by 405 1/4-ton trucks, 23 3/4-ton trucks, 146 2

¹⁶War Department, T/O&E 7-31T, *Infantry Regiment, Parachute* (16 December 1944).

¹⁷War Department, T/O&E 7-51T, *Infantry Regiment, Glider* (16 December 1944).

¹⁸War Department, Table of Organization and Equipment No. 10-327, *Airborne Quartermaster Company* (Washington, DC: Government Printing Office, 16 December 1944).

1/2-ton trucks although the authorization for 6 1 1/2-ton trucks fell from the table of organization.¹⁹ In most cases each truck had an associated trailer to increase cargo hauling capacity. The number of trucks in the airborne division had more than doubled, significantly increasing the division's ability to move and support itself.

The changes in the organization of the airborne division resulted in the deactivation of some units and the assignment of formerly separate parachute and glider battalions and regiments to airborne divisions. As a result of the 17th A/B Division's action in the Ardennes it sustained heavy casualties. When it came off the front lines in February 1945 it reorganized in accordance with the new T/O 71. The 193d and 194th Glider Infantry Regiments were assigned units and the 550th Glider Infantry battalion, a separate battalion, was attached. The War Department deactivated the 193d GIR and its troops filled the depleted ranks of the 194th GIR. The 550th Glider Infantry Battalion was deactivated and reformed as the 3rd battalion of the 194th GIR.²⁰

By the spring of 1945 Allied forces were advancing toward the heart of Germany. The Rhine River was the last natural obstacle in the path of the U.S. and British advance. Field Marshal Bernard Montgomery and his 21st Army Group intended to cross the Rhine River in the north of Germany and occupy the Ruhr industrial area which was Germany's last source of steel and coal. Montgomery's plan, called Operation Plunder, called for four divisions to cross the Rhine River near Rees, Xanten, and Rheinberg. Operation Plunder also called for an airborne assault to secure key terrain and road networks to block German reinforcements from reaching the Allied bridgeheads.

¹⁹War Department, T/O&E 7-71T, *Airborne Division* (16 December 1944).

²⁰Flanagan, 285.

The supporting airborne assault, Operation Varsity, called for the 17th and British 6th Airborne Divisions to “(s)eize high ground crowned by the Diersfordter Forest northwest of Wesel, thereby denying the enemy dominant observation on both the Wesel and Xanten crossing sites and blocking major highways leading both north and northwest from Wesel.”²¹ The initial plan for Operation Varsity called for the employment of the 13th, 17th, and British 6th Airborne Divisions. Due to a lack of transport aircraft the 13th A/B Division was excluded from the operation.²² The new organization of the airborne division dramatically increased the number of motor vehicles in the division of which a large number were not transportable by air. In order to maximize the available aircraft for the assault and still employ its vehicles the 17th A/B Division moved 2,005 of its vehicles by ground to the west bank of the Rhine River across from Wesel.²³ Once the bridgehead was established and secured the 17th A/B Division’s vehicles and other equipment would rejoin their respective units.

The divisions that were to conduct the river crossings wanted to cross at night to conceal their movements. As the Allies had air superiority, airborne planners wanted to conduct the airborne assault during daylight to maximize the accuracy of the parachute drops and glider landings as well as accelerate the speed of consolidation on the ground which was slowed significantly at night. In discussions to settle the timing of the operation the Second British Army commander, General Miles Christopher Dempsey, proposed that “the paratroopers and glidermen were to delay their assault until British

²¹MacDonald, 300.

²²Flanagan, 289.

²³MacDonald, 310.

infantry had gained a footing beyond the river.”²⁴ Based on previous operations conducting an airborne assault after the ground assault was somewhat unorthodox. Montgomery chose to accept Dempsey’s suggestion and the timing of Operations Plunder and Varsity were finalized.

Operation Plunder began during the hours of darkness at 2100 hours on 23 March 1945. A division from the British XXX Corps crossed the Rhine River near Rees. The British Commando Brigade simultaneously crossed and moved toward Wesel.²⁵ At 0200 hours the second series of crossings began when a division from the British XII Corps crossed near Xanten. At the same time the Ninth Army sent the 30th Division north of Rheinberg and the 79th Division south of the city. Neither the U.S. nor British troops experience any significant opposition on the eastern side of the Rhine. The lack of German resistance was most likely a result of the Allied preparatory fires.

Prior to the assault across the Rhine River, the opposing German forces underwent a punishing Allied aerial and artillery bombardment. Preparatory fires began three days prior to the crossing. Across Germany 2,596 heavy bombers and 821 medium bombers attacked airfields, bridges, marshaling areas, and other targets which could possibly affect the Rhine River crossings.²⁶ Thirty minutes prior to the airborne assault, medium bombers and fighter-bombers of the Ninth Air Force and British Second Tactical Air Force dropped bombs on anti-aircraft batteries in the vicinity of the drop and landing

²⁴MacDonald, 300.

²⁵Flanagan, 292.

²⁶MacDonald, 309.

zones.²⁷ Additionally, British artillery fired on antiaircraft batteries that were within range.

At 0950 hours on 24 March 1945 Operation Varsity began as the lead aircraft of an aerial train two hours and thirty two minutes long consisting of 889 escort fighters, 1,696 transport planes of the IX Troop Carrier Command, and 1,248 gliders crossed the Rhine River.²⁸ The 17th A/B Division occupied 903 transport planes and 897 gliders.²⁹ The massive size of the operation required the use of 72 C-46 transport planes which was the first time this type of aircraft had been used for a combat drop.³⁰ At the tail end of the aerial train were 240 B-24 Bombers loaded with 582 tons of supplies packed in equipment bundles to drop to the troopers on the ground.³¹

Within the 17th A/B Division the 507th PIR and the 464th PFAB were the first to jump. The Allied bombardment ceased just prior to the drop. As German defenders had not had adequate time to return to their antiaircraft batteries the aircrews and troops received only light antiaircraft fire. The 507th PIR and the 464th PFAR were to jump onto Drop Zone W. Unfortunately one battalion of the 507th PIR landed one and three quarters miles northwest of Drop Zone W near the town of Diersfordt.³² Smoke and dust from the preparatory bombardment combined with early morning fog to create a lingering

²⁷McDonald, 310.

²⁸Gavin, *On to Berlin*, 277.

²⁹Flanagan, 292.

³⁰Ibid.

³¹MacDonald, 309.

³²Ibid., 311.

haze which reduced visibility from the air and made it difficult for the air crews to identify the drop zones. The aircrews transporting the two other battalions of the 507th and the 464th PFAB managed to correctly identify Drop Zone W and exit their jumpers onto their assigned drop zone. The 464th PFAB was able to recover and employ 10 of its 12 75-mm howitzers. While seizing objectives, a trooper from 3d Battalion, 507th PIR engaged and set a German tank afire with a 57-mm recoilless rifle. This was the first time the newly fielded 57-mm recoilless rifle had been used in combat.³³

The 513th PIR and the 466th PFAB experienced a much greater level of antiaircraft fire than did the 507th PIR and 464th PFAB as the German defenders had time to prepare for the second wave of transport planes. All three battalions of the 513th PIR landed more than a mile from Drop Zone X, their assigned drop zone. The haze that affected the previous drop significantly disrupted the 513th PIR. The majority of the jumpers land in the midst of a German artillery battery. Shortly after discarding their parachutes, the troopers discovered they had landed in a British glider landing zone as British gliders landed around them. With the combined efforts of the U.S. paratroopers and the British gliderman they defeated the German defenders and were able to move on to their assigned objectives. The 464th PFAB did land on Drop Zone X as planned; however, they were the only unit to do so which left them without infantry support. This proved ill-fated as the artillerymen encountered heavy ground fire from a sizable German force. Under fire the artillerymen were able to recover their howitzers and place direct

³³MacDonald, 311.

fire upon the German forces and eventually overwhelm them with firepower of the howitzers.³⁴

The glider elements of the 17th A/B Division were the final elements to reach the ground. The newly reorganized 194th GIR supported by both the 680th and 681st GFABs had a relatively successful landing. More than 90 percent of the gliders landed on the correct landing zones. Despite heavy ground fire targeting the gliders, most of the gliders reached their landing zones and were able to disgorge the glidermen inside.

All 21,680 airborne troops were on the ground by 1230 hours. A steady stream of transport planes and gliders flowed over the Rhine River for more than two and one half hours dropping paratroopers or releasing gliders. The initial assault delivered 109 tons of ammunition, 695 vehicles, and 113 artillery pieces to the eastern side of the Rhine River. Shortly after the last transport planes cut loose its glider, a formation of B-24 Bombers dropped more than 500 tons of additional supplies by parachute. By 1400 hours the regimental commanders had reported that their D-Day objectives were secure.

The 17th A/B Division casualties were relatively light with only 159 killed, 522 wounded, and 164 missing.³⁵ The majority of losses during Operation Varsity were aircraft and crews. The IX Troop Carrier Command lost 41 killed, 153 wounded, and 163 missing.³⁶ Only 50 gliders were lost to crashes or enemy fire; however heavy German ground fire damaged 1,305 gliders so extensively that they could not be recovered. Only

³⁴MacDonald, 313.

³⁵Flanagan, 297.

³⁶MacDonald, 313.

172 gliders were salvageable after the operation.³⁷ The C-46 transport proved to ill-suited for combat drops as the configuration of the fuel tanks in the high-wing design resulted in the entire plane being engulfed in flames when struck by enemy fire. Consequently, only 12 of the 72 C-46 transports planes were undamaged at the conclusion of Operation Varsity with 22 destroyed and 38 damaged. Ridgway forbade the use of the C-46 transport for future combat drops after observing several C-46 transports being consumed by flames after enemy fire struck them. Of the workhorse C-47 transports, German ground fire successfully destroyed 44 and damaged 332 which still managed to return to their home airfields.³⁸ Typically unaccustomed to flying at low level 15 of the 240 B-24 bombers fell to ground fire. In the final tally, the Army Air Force lost almost as many air crewmen supporting Operation Varsity as the 17th A/B Division lost troops on the ground.

Operation Varsity was a success. The success of the operation may be partially responsible for the lack of recognition for the largest airborne operation during World War II when listed among operations such as Operation Neptune or Operation Market. When the 17th A/B Division crossed the Rhine River, it was much larger, had better equipment, and brought more supplies to sustain itself than either the 82d or 101st A/B Divisions had during earlier airborne assaults. The 17th also had the benefit of learning from and applying the combined experiences of almost three years of Allied airborne operations. Other than some ill-placed landings the operations went according to plan.

³⁷Flanagan, 297.

³⁸MacDonald, 313-314.

The revised organization and application of knowledge gained through the trials of its predecessors contributed to the limited number of casualties sustained by the division.

Despite the apparent success of the preparatory aerial and artillery bombardment, the smoke and dust from their effects formed a thick haze which contributed to the aircrews' inability to identify the correct drop zones. In order to maintain surprise, the 17th A/B Division chose not to employ pathfinder teams to mark the drop and landing zones with panels and homing beacons. The employment of such teams could have assisted the main body of transports locate the correct drop and landing zones, but based on the overall success of the operation it may not have significantly changed the outcome of the operation.

The recoilless rifles fielded to the 17th A/B Division just prior to Operation Varsity were very effective against German armored vehicles and other targets. The 57-mm and 75-mm recoilless rifles and the addition of 50 57-mm antitank guns over 40 37-mm antitank guns, as previously authorized, as well as the 100 additional 2.36-inch rocket launchers distributed throughout the division finally gave the airborne division adequate firepower with which to address German armored vehicles and reinforced positions.³⁹

According to the existing doctrine, airborne troops should be employed "(o)nly on missions that cannot be performed as economically or as expeditiously by other ground

³⁹War Department, T/O&E 7-71, *Airborne Division* (1 August 1944): T/O&E 7-71T, *Airborne Division* (16 December 1944).

forces.”⁴⁰ In retrospect, with four divisions already established on the eastern side of the Rhine River it might not have been necessary to execute Operation Varsity.

Although the objectives assigned the divisions were legitimate, they were objectives that ground troops alone under existing circumstances should have been able to take without undue difficulty and probably with considerably fewer casualties. Participation by paratroopers and glidermen gave appreciably no more depth to the bridgehead at Wesel than that achieved by infantrymen of the 30th Division.⁴¹

However, based on the planning and actions leading up to Operations Plunder and Varsity it appears that Allied planners were reasonably unsure of the German forces ability and will to oppose a river crossing. It is reasonable to assume that Allied planners wanted to ensure that German forces could not reinforce their positions along the Rhine River; thus, Operation Varsity was to secure key terrain and block or slow the movement of German reinforcements which could affect the Allied bridgehead across the Rhine River. The Allied planners understanding of the enemy at the time justified the massive preparatory bombardment of the operational area and the employment of airborne forces to “(s)eize, hold, or otherwise exploit important tactical localities in conjunction with or pending the arrival of other forces.”⁴²

The new organization of the airborne division as established by the 16 December 1944 T/O&E 71T spelled the end for a number of separate parachute and glider units which in the past had shifted between the established airborne divisions. The new structure of the glider infantry regiments resulted in the deactivation of several separate

⁴⁰War Department, Field Manual 100-5, *Operations* (15 June 1944), 291.

⁴¹MacDonald, 314.

⁴²War Department, Field Manual 100-5, *Operations* (15 June 1944), 292.

regiments and separate battalions. Formerly separate parachute regiments that had operated attached to the airborne divisions fell under the airborne divisions to complete the requirement for two parachute infantry regiments per airborne division.

Following the December 1944 reorganization of the airborne division, the only significant change to follow before the end of World War II was the formal induction of 57-mm and 75-mm recoilless rifles into the airborne division that the 17th A/B Division had successfully employed during Operation Varsity.

CHAPTER 6

REDEFINING THE AIRBORNE DIVISION

The airborne division began as the incarnation of a means by which to employ the growing number of separate parachute and glider battalions and regiments. The early focus of the airborne divisions was the airborne assault itself: the delivery of troops and equipment by air. The focus on the airborne assault was evident throughout the early doctrine, organization, and equipment of the airborne division. This focus created a framework around which early airborne leaders designed and built the airborne division.

The focus on the airborne assault relied heavily on the infantry and artillery forces. The logistical structure built into the airborne division did not provide logistical personnel below the regimental level in order to maximize combat forces in the infantry and artillery battalions. Field Manual 31-30, *Tactics and Technique of Air-Borne Troops* called for all airborne equipment and supplies to be delivered by air alone. This restriction, albeit supporting the focus on the airborne assault, resulted in the construction of a very lightly equipped and ill-supported division.

“Space is our most precious commodity,” says Brig. Gen. Leo Donovan, commander of the First Airborne Brigade and originator of much of the current airborne theory at the Command and General Staff School. “To eliminate the old top-heavy airborne division, we had to develop a special highly mobile, highly trained striking force for action anywhere in the world. The result was this tremendously flexible organization whereby, when necessary, the commanding general can add separate battalions and regiments before and after landing, and increase his combat strength up to a full division—without the surplus baggage of noncombatant personnel.”¹

¹Sgt. Bill Davidson, “The New Airborne Brigades,” *Yank*, 6 August 1943, 4.

The “surplus baggage” was what the airborne division discovered over a short period was required to properly support the fighting elements of the airborne division. Although some supporting personnel and equipment were in the quartermaster, signal, and other companies within the airborne division, separate battalions and regiments had the same lack of internal support structure as the battalion and regiments assigned to an airborne division. The attachment of separate airborne elements to the airborne division, as became the norm, only compounded the problem of support as the extremely limited support within the divisions could not adequately support the assigned battalions and regiments let alone additional attached elements.

The design of the airborne division was in part due to the limited resources recommended by McNair and approved by the War Department for the airborne division.

The concept of employment envisioned by General McNair, General Lee, and other airborne authorities instrumental in establishing the tabular organization, envisioned the use of this specialized striking force for definite missions wherein the manner of their commitment made possible the attainment of complete surprise, which, followed by aggressive ground action, would be the decisive factor. The capture of beachheads, key terrain positions, air bases, road nets, and the immobilization of enemy reserves, etc., in quick decisive action followed by holding action preceding the arrival of the main body of the attacking force, were embodied in the doctrine of employment and constituted the primary factors upon which training was based. Sustained ground action beyond a period of six to ten days was not contemplated; consequently, the organization was ill equipped for employment for sustained action beyond this period of time.²

McNair’s concept for the airborne division was a small and light force to be employed for a short time for particular types of missions. It was difficult and possibly unrealistic to relieve more than 8,000 troops of an airborne division within the first three to five days of battle. Not considering enemy forces, the lack of trucks capable of

²Ellis, 53.

transporting the airborne division back from the front was problematic in that the supported corps was employing its resources to get to the front lines. The supported corps had hardly enough resources to address their own requirements. It was unrealistic to believe that, even if a corps commander so desired, he would take resources from his own assigned forces to supplement an attached airborne division.

The airborne division which McNair envisioned was a flexible and agile force capable of leaping ahead of forces in the new mobile warfare in Europe. The issue that arose for airborne planners was that mobile warfare moved so quickly that fast moving ground forces quickly overran planned airborne objectives. The designers of the airborne division believed that airborne forces would regularly conduct airborne assaults as the ground forces advanced. The speed of the Allied advance across Europe precluded the frequent use of the airborne assault. What resulted were limited opportunities for doctrinal employment of airborne divisions. With divisions of capable and trained infantry and artillery troops, corps and army commanders chose to use the highly trained airborne troops as regular troops rather than have thousands of troops waiting in camps for an airborne mission while the front line units desperately needed reinforcement.

Airborne troops received more training than ground troops serving in similar fields. All infantry troops underwent 13 weeks of infantry training either with their units or later in a replacement training center. Troops which volunteered and were accepted into airborne assignments, attended the four-week long Parachute School followed by four weeks of the Weapons and Tactical Training Program. After completion of the Weapons and Tactical Training Program a paratrooper had achieved the minimum requirements to be a parachute replacement troop. If the individual was not required as a

replacement in a combat theater, he attended yet another four weeks of the Advanced Training Program which expanded on squad tactics and maneuver. Some specialties, such as demolitions, required up to nine weeks of additional training.³

From the opening of the parachute school in 1941 through the end of the war in 1945, the Parachute School's basic parachute course trained 5,995 officers and 82,949 enlisted troops.⁴ It would be difficult to image almost 90,000 paratroopers simply waiting for the next airborne assault when troops were needed in the current fight. These numbers do not reflect the tens of thousands more glidermen who underwent additional training in tactics and techniques for the employment of gliders. It is understandable why corps and army commanders employed airborne divisions in situations for which they were neither organized nor equipped. Commanders simply needed troops and the airborne troops were the only troops readily available.

The designers of the airborne division used the examples of other nation's armies and tried to envisage how to best employ the new technologies available to them. Working from the British and German organizational structures, which were based around a glider force, the U.S. designers followed suit. Within an airborne division the parachute regiment was intended to secure landing zones for the main fighting force to arrive by glider. This concept resulted in airborne divisions having one parachute and two glider infantry regiments. Both these regiments were considerably smaller and drastically less well equipped than regular infantry regiments. The exception to this organization

³Ellis, 127-128.

⁴Robert R. Palmer, Wiley I. Bell, and William R. Keast, *The Procurement and Training of Ground Combat Troops* (Washington, DC: U.S. Army Center of Military History, Government Printing Office, 1991), 319.

was the 82d A/B Division which was activated with two parachute and one glider infantry regiment. All other airborne divisions generally formed in accordance with T/O 71, *Airborne Division*.

After Operations Husky and Avalanche, it became apparent to airborne planners and commanders that parachute forces afforded a greater level of employment flexibility in that the requirements for landing paratroopers was considerably less than that for glidermen. Gliders were however still necessary as they had the ability to deliver vehicles and heavy equipment that was not deliverable by parachute. Moreover, the squads of troops and equipment that left gliders generally required only a short time of preparation before being ready for combat. In many instances, glidermen exited their gliders and went straight into combat on the landing zone. Nevertheless, the December 1944 revision of T/O&E 71T, shifted the airborne division from a glider-centric force to one based around parachute infantry regiments. In effect the addition of a second parachute infantry regiment only formalized the practice of attaching separate parachute battalions and regiments to airborne divisions as had been done in all previous operations. The consolidation and reorganization of two glider infantry regiments into a single regiment might seem to diminish the importance of the glider forces, but in fact the reorganization streamlined command and control of the organization while minimally affecting the size of the organization.

Significant to the reorganization of the airborne division is the addition of a third rifle squad to each parachute infantry platoon and the addition of a third rifle company to each glider infantry battalion. These changes brought the organization of the infantry regiments of the airborne division in line with the triangular formation of regular infantry

regiments across the Army. The airborne divisions had become less like a distant cousin of a regular division and more like a younger brother.

The conceptual employment of the airborne division relied on surprise and violence of action to accomplish its assigned missions. The requirement that all equipment be transportable by parachute or glider prevented the use of most standard army equipment. Early parachute troops relied on rifle grenades as their sole antitank weapons until the M1 2.36-inch rocket launcher entered service in airborne divisions in 1943. Glider troops employed the 37-mm antitank gun which was somewhat effective against armored vehicles. The adoption of the 57-mm antitank gun was formally accepted by the War Department after the 82d and 101st A/B Divisions successfully employed British 6-pound antitank guns in their glider forces. These gradual improvements in the antitank capabilities of the airborne division culminated with the fielding of 57-mm and 75-mm recoilless rifles in combination with the 2.36-inch rocket launchers which remained in service alongside the newer weapons. The airborne division, lacking more powerful antitank weapons, distributed its antitank weapons widely across the division. Over time the number of antitank weapons increased in order to address the threat posed by enemy armored vehicles.

Also reflective of the original intent of light and highly agile forces was the widespread use of the M1 carbine in the airborne division. The reorganization of the airborne division in December 1944 significantly increased the number of M1 rifles along with the addition of 4,000 additional troops while actually decreasing the number of M1 carbines authorized. The stories of troops striking enemy soldiers with multiple rounds

from a M1 carbine may or may not have been completely accurate, but the December 1944 T/O&E 71T clearly illustrated a preference for the M1 rifle.

Thus, the lightly armed nature of the airborne division, which designers deemed necessary in order to facilitate rapid movement for the airborne assault, eventually failed the airborne division as it left the division unprepared to adequately defend against an enemy counterattack especially if the enemy used armored vehicles. The lessons learned during Operations Torch, Neptune, and Market from the difficulty in defending against German tanks and mechanized forces culminated in a major improvement in the overall firepower of the division through the addition of a fourth artillery battalion and employment of heavier weapons.

Based on the same idea of keeping the airborne division light and agile, the airborne division began with few motor vehicles authorized. These were predominantly ¼-ton trucks assigned to the glider forces. The inability of the airborne division to move itself on the ground was a major problem when the supported corps did not have enough trucks to assist an attached airborne division. The December 1944 revision of T/O&E 71T authorized hundreds of additional trucks for the airborne division, specifically a large number of 2 1/2-ton trucks, which were not transportable by air. This change indicated a major departure for the earlier requirement that all airborne equipment be either dropped by parachute or landed by glider. After several major operations, the logistical situation presented by combat overcame the original concept for the equipping of the airborne division.

The end of World War II brought the downsizing of the Army and left room for only one airborne division. The 82d A/B Division remained active as an airborne division

while the other four airborne divisions were deactivated. Since World War II the U.S. has not conducted a division sized airborne assault. In the Korean War the 187th Regimental Combat Team conducted an airborne assault at Sunchon, but fought predominantly as ground troops. The 82d A/B Division has also provided forces to conduct airborne assaults, but the division has primarily fought as ground troops since 1945. The airborne division's evolution from a force trained and equipped specifically for conducting airborne assaults to a more generalized force capable of conducting airborne assaults as well as combat actions as a ground force provides commanders more flexibility in how they employ their forces. The airborne division of 2011 is a direct decedent of the airborne division designed in December of 1944. The organization is somewhat changed, but the concept and mission set of the airborne remains the same in that it is an infantry division capable of conducting an airborne assault.

From 1942 to 1945, the airborne division's doctrine shifted its focus from the method of employment to encompass the entire scope of the mission. The situation during World War II forced the airborne division to evolve. Commanders needed troops for combat and the airborne divisions had large numbers of highly trained troops. Although initially the airborne division was undermanned and ill-equipped, over time planners understood that the doctrine, organization, and equipment of the airborne divisions would have to evolve to meet the situation because the reality of combat had taken precedence over the optimistic situations under which doctrine permitted the employment of an airborne division. The small, specialized, lightly armed and equipped force designed by McNair, so as to not take resources away from general purpose forces,

in the end grew to become less of a specialized force and more of a general purpose force capable of executing a specialized mission.

GLOSSARY

Air Landing Troops. Troops delivered to the battlefield by powered aircraft and later gliders.

Airborne Assault. Assault conducted using a combination of parachute, glider, and air land forces

Glider Assault. Assault conducted with only glider forces.

Parachute Assault. Assault conducted with only parachute forces.

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